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COORDINATION OF FARM MANAGEMENT RESEARCH IN THE WESTERN STATES[1]

C. L. HOLMES
BUREAU OF AGRICULTURAL ECONOMICS

The assignment to discuss coordination of farm management research between the western states and the United States Department of Agriculture is a most gratifying one in view of the research program of the Division of Farm Management and Costs and its close relation with state farm management workers in all of its research effort. Of the sixty or seventy projects being carried on in various parts of the country by our division, all with the exception of two or three are conducted cooperatively with state agencies.

Farm management as a field of research has to do with the economic problems of the individual farmer. State farm management workers are up on the firing line in this campaign. If a program of research in farm management conducted by a federal agency is to be effective it must be geared to state effort. There is also a reciprocal phase of this relationship. Though the farm management problem is an extremely localized one, down to the individual farm and its operator; nevertheless, the problem is also regional and national in its scope. The farmer finds himself face to face with economic conditions which are world wide in their ramification. He must compete with farmers in various parts of the country and abroad. Therefore, a program of research aimed at meeting his problems must be comprehensive enough to give him the benefit of knowledge of what his competitors are doing and the forces and conditions under which they are working in order that he may know the nature and

[1] Paper read at the Annual Meeting of the Western Farm Economics Association at Moscow, Idaho, June 11, 1931.

strength of the competition he must meet. Probably quite as much, therefore, the state has need of an agency whose field extends beyond state borders as the Federal Department has need of localized connections which will enable it to make its efforts vital.

I understand from correspondence with this association's secretary, and from the minutes of last year's proceedings, that a considerable amount of discussion was entered into as to the coordinating function which this division might perform in connection with farm management research work in the states of this region. I believe it was suggested that a man be employed whose special function would be to coordinate farm management research work, and, so far as possible, eliminate duplication on such phases of farm management problems as are common to several states. It is a matter of regret that we have not been able to comply more fully with the spirit of these suggestions. The lack of personnel is primarily responsible for our seeming failure. We are devoting a considerable amount of research time to projects in this region and we hope to devote still more time in the future, and to meet our responsibilities, as far as possible, by full participation in a unified regional program.

In the present paper it is my desire to discuss briefly the following considerations with reference to research work in the western states and the coordination of effort among the various agencies involved:

1. Objectives of farm management research.
2. Some considerations essential to the effectiveness of farm management research and to the use of its products in view of the present agricultural situation.
3. The outline of a proposed regional program in farm management research.
4. A proposal for the coordination of farm management research effort in the western states.

Objectives in Farm Management Research

One of the most important requirements in any field of endeavor is occasionally to get far enough away from the whole structure to view it in perspective and to determine with as much clarity as possible what it is for and whether or not it is achieving the ends for which it was brought into existence. We need thus to look at our farm management research effort and to raise the questions: What is it for? Who is to benefit? What ought it to achieve, and by what means? The specific objectives of various research agencies interested in the same general problems

may be different in detail but are not likely to be out of accord. This is true with reference to the agencies in farm management research set up by the Federal Government and the State.

Farm management research had its beginnings in the efforts of state agencies. Only a few states participated in this early beginning. Subsequently a substantial expansion in farm management research effort came with the establishment of it in the Federal Department. In these earlier efforts there was but little in the way of cooperative work. As interest in farm management problems expanded and more state agencies were financed for the beginnings of farm management research work, a new phase of the federal effort developed. It came in the form of cooperative projects in which the part of the federal agency was very largely that of helping finance state projects. There was not in the case of most of these newer projects any very close relationship between the federal worker and the primary data gathering involved in the project. The intimate understanding of the qualitative factors in the problem, which should come from any well conducted farm management research project, were secured primarily by state rather than federal workers. It was only occasionally that state and federal workers participated very closely in the analysis and interpretation of the data. More recently we have tried to remedy this situation by having responsible staff members of this division work in close cooperation with similarly responsible state workers in the entire prosecution of the projects, from the planning and conduct of the field work, through the tabulation and interpretation, to the final preparation for publication. We are doing this partly because we have a growing consciousness for the need of concentrating in the Federal Department as intimate a knowledge of American agriculture and its economic problems as is possible. More and more the various branches of the Federal Government having an interest in agriculture are working toward national and regional agricultural policies. What is more fundamental as a basis for a rational working out of policy than an understanding of the farmer's own economic situation and the problems and conditions which confront him, both external and internal to his own business? Such an understanding can best result from an adequately conceived and effectively executed farm management research program.

An occasion for the stock-taking of our effort, such as was just mentioned, comes annually in the division with the preparation

of the budget and the presentation of data supporting our budget recommendations. Those responsible for approving and voting funds insist upon reasons why the funds should be forthcoming. One important benefit of this annual procedure is that it compels us to think on what we are really trying to do in our research program and how successful we are in reaching our objectives. On the most recent occasion of this sort I put down the following as the objectives of this division:

First: to achieve an intimate understanding of the farming industry in every part of the United States, including the financial and business organization; the nature of its personnel; its production program; the physical, technical, economic, and personal factors which have been and are now shaping it; and to determine the trends of its future development. We want to acquire this intimate understanding, first of all, on the part of our own staff, and, second, to generalize it by means of publication, participation in outlook conferences, and the supplying of material for extension work and other types of adult education as well as the more formal education in farm economy presented in farm management courses in our agricultural colleges.

Second: the determination, so far as possible, of the form of farm organization and method of operation representing highest comparative advantage, that is, the best and most profitable use of farm resources, for every agricultural region and area and for various combinations of conditioning factors within these regions and areas. This objective is, of course, a part of the preceding one, but carries it definitely into the field of farm business administration; whereas the first is directed more toward the general and collective aspect of farming.

Third: to find the most practicable ways and means for reducing the costs of agricultural production through the adoption of more efficient farm organization and farm practice and through the most effective adjustment of size of farm, distribution of labor, and use of all farm resources. What we need to turn our attention to in connection with farming costs is the matter of efficiency in both organization and operation which will mean a larger output for the use of a given amount of the factors of production and hence put the producer in a stronger competitive position by enabling him to produce at lower costs. This seems undoubtedly the process by which readjustments to new price relationships must come about.

Fourth: to coordinate and analyze all data secured in pursuit

of the foregoing objectives, and such other information as may bear on the problem, for the purpose of determining the nature of the readjustment necessary to place American farming in a satisfactory economic position and to hasten the process of such readjustment. This, of course, has reference to the utilization of farm management research results in extension programs, outlook making, and general educational activity.

Inadequately as these objectives are stated, I venture that they express to some extent, at least, the things the state farm management workers have been thinking about in the setting up of their program and projects. In view of the intimate way in which the state research man is connected with the educational efforts of his institution, there must always be a somewhat closer connection between his program and that of extension and classroom teaching work than can be true of the federal worker. The efforts of these two groups of research workers, however, should be so coordinated as to contribute jointly both to the educational uses, which are primarily state responsibility, and the broader needs of the Federal Department.

Some Essentials in Making Farm Management Research Work Effective

It may be worth while, before discussing the specific elements of a farm management research program, to note briefly some essential considerations in effective research in this field. For the most part, the things to be noted here are obvious, but it seems to be a besetting sin of the research worker, as well as many other classes of workers, to overlook many things which are very obvious and at the same time very fundamental in the working out of his problem.

First of all, it would seem that our research should be vital, that is, directed at actual problems. This seems too obvious to further notice. "Pass on," you will say, "to your next point." But are we sure always as to the real nature of the problems we are attacking? Are they always obvious facts to us? The research worker in farm management must have a broad vision of his problem in order that he may appreciate the bearing of external forces and conditions upon the individual farm business which he is studying; but, quite as much, he must have a penetrating vision in order that he may readily discern the factors that are at work within the farm organization itself and which, I believe, all too frequently escape the scrutiny of the farm management

research man. We are all too familiar with the results of the worker who sees no more than the mere taking of records, the tabulating of them, and the pointing out in his text the obvious quantitative results to be found in his tables.

In the earlier days of farm management research, with objectives less clearly defined, it was not surprising that a more or less formalistic attitude was taken toward it, particularly on the part of the less experienced worker. Charged with the responsibility of using research funds, it was perhaps to be expected that he should merely do another survey or conduct another cost study. However, with almost three decades of farm management research experience behind us in this country, and with a growing appreciation on the part of administrative officials and the public of the economic problems confronting agriculture and of the nature of the farmers' position in the whole problem, it seems obvious that in the use of the limited funds at our disposal, we should proceed to think carefully into the nature of each problem before we attack it. We should select carefully what to study and should determine in advance the essential facts, both quantitative and qualitative, that are required.

In the second place, it seems to me that our research efforts should be directed not merely at the immediate aspects of a problem for the purpose of quickly getting limited results much needed to meet emergency situations; but that a considerable part of our research energy be devoted to the more fundamental factors underlying the urgent problem. Under the present condition of agricultural depression there is tremendous pressure for immediate results from research because these results are sorely needed as a basis of some sort of program, either of extension or otherwise. All of our research institutions are feeling more and more the pressure of these immediate service tasks and are realizing that the more fundamental aspects of research are suffering from lack of attention. In the case of our own division, the necessity of spending a larger and larger amount of time on the very necessary, and, let us hope, fruitful work connected with the making of outlook reports, is cutting seriously into the time and energy necessary for the prosecution of our research projects.

Further, the nature of the research projects themselves is being influenced by this demand for quick results. I can illustrate it by one instance, that of a farm power study which we recently conducted in cooperation with local agencies in ten states. Recent

changes in the farm power situation urgently demanded information on power duty of tractors as compared with horses, upon the relative costs of power from the two sources, and many other aspects of an immediately urgent nature. It was possible, in this study, to do no more than meet these immediate demands. The more fundamental problems of real farm economy in terms of size of business, financial requirements, and modification in the organization of the farm tied up in this shift from animal to mechanical power, could not be touched upon, much as we recognize the desirability of it. What we need to do is to resort now to some intensive studies on the more fundamental aspects of this important problem.

Some other specific lines of inquiry of a more fundamental nature may be mentioned. The whole range of problems centering in the physical law of diminishing returns as it affects the application of fertilizer or the feeding rations of livestock, or the amount of labor and power most profitably employed in crop production, needs the sort of study which thus far we seem to have been unable to give it.

The third essential has to do with research method. It is important that we shall not let our method run away with us. In other words, the consideration back of method is the problem to be attacked and the results to be obtained rather than any abstract perfection in method itself. I believe there is constantly a tendency to stereotype our methods and to determine whether this or that one is valid or proper as contrasted with some other method which we are prone to condemn. In a field so complex as farm management, our research method must be kept flexible and adaptable to the specific nature of the problem being studied. Long discussions on the technique of sampling and of testing of samples have been engaged in, probably without an adequate realization of how complex a thing a farm is and how many of its hundreds of characteristics are involved in a farm management inquiry. The growing attention to research method is certainly all to the good. However, we should guard against taking wholesale any generalizations with reference to method and procedure. The effective research man must be able to modify his method to meet the specific characteristics of the problem he is studying. It would seem that controversies as to the validity of of the survey method or of the cost analysis method are very largely beside the point. The real question is how the research worker can best get at the realities in the farm situation. He will

need to determine, first, what is the problem; then, what are the facts needed to throw adequate light upon it, how to get them in a most dependable and adequate form; and then to see the relationships. There is no substitute, in the form of automatic method, for the ability to do effective analytic thinking and adequate synthesis of the results of analysis in the process of interpretation.

A fourth essential which, to my mind, has been too much neglected all through the development of farm management research, is the necessity of recognizing the farmer himself, in the farm problem, as a responsible organizing and directing agency. This realization is essential to the making of research results educational, and not merely rule-of-thumb directions to the farmer on how he should set up and run his business. We have, I think, been prone too frequently to use our research efforts, as a means of diagnosis of the farming situation, with a view of writing a prescription of such general application that it might come under the classification of old-fashioned patent medicine. We have probably been too prone to regard the results of our research work as being, ideally, such as to relieve the farmer of the necessity of thinking out his own problems; whereas, at best, all that we can hope to accomplish, and what in the long run will be most effective in the way of accomplishment, is to furnish him with an adequate basis and equipment for thinking through his own problems and arriving at his own decisions with reference to the organization and management of his business. It is important that we call ourselves to task frequently in order that we shall not forget the importance of this fundamental point of view—that of the farmer's own responsibility and the hopelessness of our aiding him toward more successful farming except through a recognition that he is master of his own economic destiny.

Finally, we should recognize the desirability of a most intimate working relationship between the research man and the extension man in farm management. If research is to be most worth while it must be more than getting facts and more than analyzing them. It must involve the living into the farmer's problem on the part of the research man. If extension work is to profit by the results of research it cannot, except in a very limited degree, come through the mere handing over of facts, even though they be most properly analyzed and garnished. The extension man himself must live into the problem pretty much as the research

man does. Busy as the extension man is at all times, I am inclined to think that he would get further with his problem if he took some of his time for association with the research man as the latter goes about his task of studying the farmer and his business problems, and in thinking through the relationships which he finds in the processes of interpreting his research results. In other words, it seems to me extremely desirable that the extension man participate, at least to a limited degree, in the research process itself. In this way he should be able not only to benefit himself and to enrich his store of material for extension work, but he should be able to help the research man very materially in keeping his feet on the ground and keeping his procedure keyed to the vital considerations of the problem he is studying. This sort of cooperation is admirably exemplified already in several of the states of this region.

Suggestions for a Coordinated Research Program

We are now ready to discuss a program of farm management research, together with a proposed division of labor upon the various projects, the cooperation which should be involved, and the coordination of its various elements. Such a program should be shaped with due consideration to the nature of agriculture in the western states, to the peculiar agricultural situation, both local, regional, and general, in which the problems have their setting, and the amount and quality of the resources available to support such a program. It should, of course, be shaped to meet the objectives determined upon and be made to conform to the best conceivable in the way of research method. Most important of all, it should be planned with a view of supplying a constantly growing body of information and interpretation for the various educational and policy-forming agencies concerned with western states agriculture.

In presenting suggestions for such a study, I am keenly aware of the substantial developments in farm management research in the various western states and of the very considerable volume of results which have already come from these state programs. Nor are cooperation and coordination entirely new elements in the situation. This division has some of its most pleasant and profitable cooperative relations in connection with projects being prosecuted in the West. It is only with a view of working toward a more comprehensive and complete program and a still

better alignment of research effort toward unified objectives that I venture to suggest the following outline:

1. Studies on the collective or general aspects of the farm management problem.
   - A. Types-of-farming projects
   - B. Local price studies
   - C. Elasticity of supply
   - D. Interregional competition and commodity studies
2. Individual aspects: or farm organization and management
   - A. The farmer's program of production
   - B. Size of farm
   - C. Farm improvement
   - D. Farm technique, including farm power, machinery, crop and livestock practice, and farm operation
   - E. Efficiency and costs
   - F. Financial organization and management, including long-time capital, operating capital, reserves, and credit relations
   - G. The human element in farm proprietorship

Let us take up the various items in this outline for detailed comment. In the first place, the division of the field into its collective and individual aspects may need some defense. It seems to me that the farm management research worker may clarify his thinking on the organization of his work to a considerable degree by making this distinction. Although farm management as a function is very distinctly a matter of the individual farmer and his farm, nevertheless, the farmer must work in an environment, partly physical and partly economic, which both the farmer and the research man should adequately understand. No farm management research worker can have adequate appreciation of the individual farmer's problem of economy unless he understands pretty thoroughly the economic and physical environment to which the farmer must adjust himself in his job of making a living and getting ahead in the world. Further, if we are to take the educational point of view as to the value of farm management research results, we must supply the farmer and his advisers with a fairly adequate understanding of this environment. This is my justification for the considerable amount of attention given in this outline, and in the program of the division, to what I have termed the collective aspects of the farm management problem.

The first item in this group, the type-of-farming studies, is, at the point of departure, as well as a considerable distance along its way, collective in its nature. It is essentially a general picture of the agricultural industry in its lights and shades geographi-

cally presented. To be sure, geographic differences in the agricultural industry are not the only ones nor the most important; but geographic treatment in the characterization of the agriculture of a state or region has such unmistakable utility that we tend to put the emphasis upon that phase.

Most of the type-of-farming research already done under formal projects has been carried on in the Mississippi Valley where conditions are comparatively uniform and where the job has probably been easier than in regions of more heterogeneous natural conditions such as are found in the West. At the outset, it is to be recognized that this work bears a very close relationship to research in land utilization and economic geography. The essential characteristic of a type-of-farming study which differentiates it from other closely related studies is the point of view and method of procedure. Type-of-farming research takes its departure from an interest in the internal business organization of the farm; it seeks to determine model types of farm organization. The internal relation of farm enterprises and the close connection of this study with farm organizations studies themselves are the unifying considerations which give this type of research its character and identifies it as within the field of farm management.

Several different research procedures have been followed in pursuing type-of-farming studies. In its beginnings it is essentially a reconnaissance whose immediate objective is to reveal the general nature of the farm management problems to be studied. For this reason it resorts to the use of comprehensive data such as census figures in order to depict the agriculture in broad terms and to mark out the boundaries of areas having generally similar farm economy. From this point it may proceed in one or both of two directions. It may confine itself entirely to the general aspects of the agricultural industry, area by area and region by region, and seek to determine the causal factors which have shaped agricultural development and are now determining the trends of its future development. The other direction in which it may be developed is toward the more intensive farm organization studies themselves. The first step in this direction is the determining of model types of farm organization within each area. The extent to which this is pursued depends upon the judgment of the research worker and upon the nature of the program of which the study is a part, as well as upon the immediate and long-time objectives. If it is pursued any great

distance it becomes identical with the individual farm organization study in its various aspects.

In our divisional program we are conceiving the first of these directions of development to be the major one in a type-of-farming study. First of all, this keeps it in the collective rather than the individual part of the program. Further, the seeking out of causal relationships is the most essential part of a program directed at a full understanding of our agricultural problems and in developing a basis of fact and analysis on which to build an educational and policy-forming program. For example, we must first know the relationship between the recent extension of the wheat and cotton areas to the nature of the soil, surface, and rainfall, as well as to the general technical picture of this new phase of farming, in order to form any intelligent judgment as to what should be the nature and extent of readjustments to meet the conditions imposed by the new price phase in which these regions find themselves.

A careful consideration of plans for this type of study is peculiarly in order just now not only because of the need for the results but because of the early availability of new and important data from the fifteenth federal census. For the first time, the census is to report on types-of-farming based on a classification of farms determined by sources of income. Dr. Elliott, who formerly was in charge of the type-of-farming studies of this division, has had charge from the beginning of the tabulations and analysis of this phase of the agricultural census. A series of state bulletins is in process of preparation. This material should be of great significance in connection with this sort of study. Further, the use of it by the states and the Federal Division of Farm Management should be made as early as possible before the material gets out of date and while it can be of maximum value in the present agricultural depression. Situated in our offices as a near neighbor to the Census Bureau, our division is enabled to digest and make available for joint utilization on this line of projects the resources of the federal census. This is one of the fields in which there can be an effective division of labor under a series of cooperative projects which will give us a new inventory of western states agriculture and form the basis for a unified, coordinated program of farm management research.

It should be understood that the census material, supplemented as it will be by the new data already referred to, is only

a part of the data needed in the types-of-farming studies. We need, particularly in the western states, to gather all available data on topography, soils, and other physical conditions, and we need more particularly a close scrutiny of the farming itself as a basis for interpreting the quantitative data secured. It is at this point that we want to tie up most closely with the state men. With their greater familiarity with the details of the agriculture of their respective states it will be, it seems to me, primarily their function to contribute to the interpretative phase of these studies.

The next item in the collective group is local price studies. This represents an aspiration rather than any very significant start. Such work as this division has already done in this field has been only incidental and in connection with the local farm organization studies. Logically, it represents a field of joint interest between farm management and price analysis.

Information with reference to local farm prices is of great importance in connection with farm organization work. The departure of local prices from central market prices is a thing which varies both regionally and seasonally. An understanding of the extent to which these variations go and the causes for the seasonal variations are essential to understanding the farmer's problem of readjusting his production program. In this respect, local prices constitute one phase of the economic environment which we seek to examine in type-of-farming studies.

So far as I can see, there is no particular logic in the determination of what agencies shall be predominantly active in these projects. It is not a thing which can be delegated to one state agency and be used by another, since the local price pattern will be different for each state. It would seem to lie within the field of cooperative federal and state activity, just as most of the other localized aspects of the problem do.

The third item in this collective list is elasticity of supply. This also is closely related to the type-of-farming work since it seeks to explain the dynamic phases of farmers' programs of production and their response to the various phases of commodity price cycles. It seeks to answer the question of the extent and timing of changes made in the volume of output by farmers of any given commodity in response to price changes. This division has made a start on this work by studying the variations in flax acreage, variations in the output of hogs, and similar variations in dairy output. Some interest in this work has been manifested on

the part of certain states and we are getting some calls for cooperation from the Middle West. It is a type of study which lends itself particularly to statistical analysis and as such tends to be a one-man sort of research task which may possibly be more logically the work of this division than of the states in a coordinated program. Nevertheless, we invite the interest of the state men in this and shall be more than willing to establish cooperative relations where they are desired.

Interregional competition, the fourth item in this list, is of growing interest and importance in this period of instability and need for readjustment. The wheat farmers of the United States are more and more asking the question how long the severe competition from other lands is likely to be continued. Similarly, the growers of Idaho potatoes are interested in the probable expansion of the potato acreage in other states and its effect upon the prices they will be able to get. Basic to these considerations is a study of relative efficiency and comparative costs between producing regions, and of enterprise competition and comparative advantage as between alternative enterprises in each of the competing regions producing any commodity. It is most assuredly a thing involving the general aspects of the agricultural industry, but for its adequate treatment it involves most intensive farm organization studies, not only within the given region concerned but also within the *competing* regions.

The interregional nature of the problem of competition puts this sort of study well within the realm of the Federal Department. Limitations of state funds and state research men's time, and the impracticability of working outside state boundaries, effectually prevent state men from studying conditions in other states and regions. It is the responsibility of the Federal Department, therefore, to bring together such information as may be available and to supplement it where necessary in order to supply the essential information. This division is carrying on a group of studies which, for lack of a better term, we call commodity studies, whose first objective is to meet this sort of problem. Up to this time we have confined our efforts primarily to a series of cooperative projects on commodities such as apples, or some other rather highly specialized crop, and have tried to show in a comprehensive way through projects, usually cooperative with a number of states, the production methods and production costs under the varying conditions found wherever the commodity holds an important position. We have had, on the whole, more demand for this type of study than we have been

able adequately to meet. Quite recently we have undertaken a somewhat different attack. There has been demand for a nation-wide poultry study. We knew that many states had been studying the farm management aspects of poultry farming, both specialized and general. We knew also that we could not finance a major study of so important a commodity if it meant gathering original data in adequate amounts. We therefore approached state workers on the proposition of utilizing already gathered material in order that we might put it together in an attempt to paint a national picture of the poultry industry. The response has been gratifying indeed. We hope that we may be equal to the task of coordinating and interpreting the vast amount of information which has been offered us. It would seem that this division might render a similar service with reference to many commodities which state workers have studied.

The second general group of studies, entitled "individual aspects of farm organization and management," embraces the central field of farm management research and is one in which the major investment of research funds up to this time has been made. In a sense, all of the considerations listed under this general topic constitute one major project and in many cases have been studied jointly rather than separately. Under most conditions I think that we may well favor the single project approach rather than to divide it into many limited phases. There are special situations in which limited aspects of the farm organization problem may be studied to good effect. However, the farmer is interested in all of those things and, as we need to study his problem from his own point of view, there is considerable advantage in a type of project which covers the whole range.

Let us examine some of the sub-divisions of this group from the point of view of their significance in the present agricultural situation and their place in a farm management research program. The farmer's program of production is meant to include the whole matter of crop rotation and livestock enterprises in their complementary, supplementary, and competitive relations. It may well be considered the center of interest in the farm organization study. Size of farm is a matter of growing importance in the readjustment of western states agriculture which seems so imminent in many areas. Under farm improvement is contemplated such matters as the type and size of farm buildings, farm and field layout, and other problems of building and maintaining the farm plant.

Farm technique is a phase of major importance in present-day

organization and particularly in the West where the introduction of new machines and power units has gone so far toward upsetting the traditional methods. It is in this connection, perhaps more than any other, that the matter of relative costs enters in and in which the effectiveness of the farmer as an operator, as distinguished from his function in planning and organizing, is to be considered.

Under efficiency and costs are contemplated such comparative studies as usually enter into a general farm organization project designed to measure the effectiveness of various methods of operation and to compare these efficiencies on various farms by indexes or other means of measurement.

Under financial organization and management there is contemplated a study into the pecuniary background of the whole physical set-up and operation of the farm. The financial problems involved in securing and investing capital, the creation of adequate financial reserves, and the establishment and maintenance of credit relations, have assumed added importance in view of the depressed condition of agriculture in many parts of the region. The new technique itself has fundamentally changed the capital structure of the farm, in terms of both long-time capital and operating capital. We have probably assumed, mainly on the basis of the added efficiency which the new technique has made possible, that it has given certain of our newer areas a strong competitive advantage over similar areas where the new technique is not so readily adaptable. We have failed fully to appreciate the financial aspects of this question. For one thing, it has changed the proportion between out-of-pocket costs and those costs represented by the use of the farmer's own time and that of his family. In so doing, it has made the farm business somewhat less immune to shocks of unfavorable prices and drouth visitation. When we build up a capital structure we must realize that the costs must be met by current income or from reserve. They can not be met by contracting the standard of living. We need to do a lot of thinking on this phase of the farm organization problem, particularly in the dry-farming areas of the western states.

The specific set-up for research covering this general field of farm organization and management is of major importance. In general, both the Federal Division and the individual state have a vital interest in the results. At the same time, the results from any given project designed to meet the problems of a par-

ticular localized situation are useful in only a limited extent outside of that area. It therefore does not lend itself well to a division of labor between the states although there are cases where type-of-farming areas overrun state lines in which an effective division of labor may well be worked out. On the whole, however, this type of project seems to lend itself to a joint sharing of expense and responsibility between the individual state concerned and the Federal Department. The extent to which the Federal Department can enter upon projects in all of the areas of interest, both nationally and to the state, depends upon the extent of its finances. Obviously, only a limited number of projects can be conducted at a given time on the basis of our present budget. It is of utmost importance that the areas selected represent major problems and important sectors of the agricultural front.

Space does not permit our discussing the specific forms which these projects should take, the type of information which should be gathered, and the type of analysis which may best be applied. These are matters which must be left largely to the cooperating parties to be adjusted to the peculiar needs connected with each individual project.

The last item under individual aspects is that of the human element in farm proprietorship. It has been our feeling that most farm organization studies have inquired into the organization itself and not the man behind the organization, although it has been generally recognized that he is the essential element responsible for the efficiency or non-efficiency with which the unit is organized and operated. To be sure, a considerable amount of attention has been paid to farm tenure as it affects farm organization. What we need more particularly to study is personal traits and individual background in their effect upon a farmer's ability to organize and manage a farm successfully. This division is just rounding out the first phase of a project cooperatively conducted with the Minnesota Station in which we have attempted to do a little experimental work in research method in this field. The results are tentative as yet and we expect to carry the experiment very much further. It seems likely, however, that it will be possible to add this aspect to almost any general farm organization study and thus to add to our understanding of the significance of the human element in farm economy.

Coordination

Within the limits of a paper of this sort it has been possible only briefly to sketch the considerations in a coordinated program. It remains to make my suggestion promised in the Introduction for a plan to coordinate, as far as possible, the farm management work in the various western states with the work of this division. I do not believe it is feasible for any federal man to assume the whole responsibility of leadership in this important matter. I suggest, therefore, that a committee or council be established, composed of representatives from each of the states and from this division, something after the model of the New England Research Council, whose function it would be to study the need for farm management research from the point of view of the region as a whole, to suggest a division of labor on such projects as need not be studied by each state, and work out the whole program of cooperation and coordination suggested in the discussion of this Association last year.

The considerable travel expense involved in the meetings of such a council would preclude any very frequent getting together. Perhaps at the start an annual meeting in connection with the meeting of this association would have to suffice. Much could be accomplished through correspondence. The chief advantage, it would seem to me, would arise from the understanding and unification which would result. I wish to assure the members of the Association that this division is more than ready to participate in any movement which promises to knit together more closely the work of farm management research men and to make more profitable their already valuable effort.

THE HISTORY AND OBJECTIVES OF OUTLOOK WORK[1]

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Outlook work to most of us is, I think, a rather vague term. When we think of outlook work we think first of all of outlook *reports*—national, regional, and state—but we think of outlook *work* as including more than the preparation and dissemination of outlook reports. We say to ourselves—and to others—that we are endeavoring to help farmers adjust supply to demand, or to determine what readjustments in production will be profitable, or, to quote from the opening statement of the National Outlook Report for 1927 (four years ago), "to give farmers information that will assist them in planning their production programs." We say to each other that the outlook must be regionalized and localized, that blanket recommendations concerning adjustments in production are unsound, that outlook work is very closely related to farm management work, etc. But, we have not gone much further than this in deciding just what is included, or should be included, in the outlook program of the U. S. Department of Agriculture and the State Agricultural Colleges.

One of the primary objectives of outlook work has been, and probably will continue to be, to obtain and make available to farmers information that will be helpful to them in planning their production programs so as to obtain the greatest returns for their efforts and resources. At any particular time, this means determining what changes and adjustments will result in larger incomes, or smaller incomes, than can be obtained if production plans and programs of the present are continued. Production programs, and changes and adjustments in production programs, are made by individual farmers for their individual farms, and if we are to determine what changes and adjustments will result in larger incomes, we must approach the problem from the standpoint of the individual farmer. This means determining what combination of enterprises and what methods of production will yield the greatest net return this year and in the years ahead.

As a complement to studies of this kind, outlook workers need to know what factors farmers take into account when deciding upon their production programs and what weight they give to

[1] An address before the Western Regional Outlook Conference, Salt Lake City, Utah, July 28, 1931. Paper No. 25 of the Giannini Foundation.

each factor. Shifts and changes in production are occurring continuously in every area, but some farmers change in one direction and some in another. Some farmers respond quickly to changes in price relationships, some respond slowly. A knowledge of how different classes of farmers "react" to changes in prices and costs, and to non-economic factors as well, would help outlook workers to see the problem from the standpoint of the farmers they are endeavoring to serve. It would enable them to form a better judgment as to the changes and adjustments that will be practical and feasible on farms of different types. Incidentally, such knowledge would be of considerable help in determining the most effective methods of presenting outlook information to farmers.

To be sure, all outlook work is not aimed at production plans and programs. Farmers need information on which to base their marketing plans as well as their production plans. A complete outlook program will include market outlook work as well as production outlook work. Growers of staple crops have the choice of selling at harvest time or storing for sale at some future date. Livestock producers can often have considerable latitude as to the date at which they will sell. Cooperative marketing associations need outlook information for use in shaping their sales and merchandising programs. A considerable amount of outlook work is, and should be, directed at marketing rather than production.

Another feature of a complete outlook program, especially important from a long-time point of view, is what might be called *economic education,* as distinguished from *economic information.* It has been stated that: "Equally as important as the actual information which an outlook report contains is the stimulus to thinking which it gives." It would be unfortunate if, in our desire to furnish farmers with information that will enable them to make better decisions as to what to grow and when to sell, we neglected to help them learn more of the fundamental concepts of economics. We all need a better understanding of the economic world in which we live. Farmers should know the forces that have caused things to be as they are, and the reasons for them. Otherwise they will not know whether their actions as individuals or groups will improve or injure the situation. If farmers are to understand outlook reports and have confidence in them which is based upon knowledge rather than on faith in the individuals who prepare the reports, they must know the fundamental prin-

ciples of economics. These principles will have to be illustrated first in one way and then in another, and they will require constant repetition.

The development of information concerning *adjustments of production* will doubtless be of major importance in the outlook program for most commodities and for most areas. So long as the majority of producers continue to make their production plans without a careful consideration of probable future conditions, serious maladjustments in agricultural production must be expected. When we contrast the characteristics of the production of agricultural commodities with the production of most other classes of commodities, we see that planning production in the light of future conditions is of particular importance in agriculture.

The length of time between planting and harvesting, even of annual crops, is relatively long. There is no time between planting and harvesting where production processes can be postponed or when partially grown products can be stored until conditions become more favorable. Beans, for example, are planted in the spring but are not harvested until about five months later. Over 50 per cent of the entire direct cost of growing and harvesting the crop comes in the preparation of the land and in planting. The grower can do relatively little in modifying his operations if conditions change as the season advances. If prices rise, he cannot plant a larger acreage because the season for planting has long since passed. He can, of course, increase his yield to some extent by more careful cultivation, irrigation, and control of insects and disease, but the influence on total production ordinarily will be relatively small. If prices fall he cannot stop the growing of the crop nor can he store the results of his labors for a time. If he plows out the crop, he loses the investment thus far made, and it may be too late to plant anything else. If he neglects the crop entirely the savings may not compensate him for the lower returns.

The demand for many agricultural products is inelastic. Consumers do not respond quickly to changes in prices when buying the staple articles of food. A rise in prices does not greatly retard the consumption of necessities, nor does a fall in prices greatly stimulate their consumption. It is entirely conceivable that the people in this country could use twice as many automobiles next year as they did this year, or twice as many radios, or go to twice as many shows, if prices were low enough, but it

is hardly possible that they could eat twice as much food even if they got it for nothing. Not only is the demand for many farm products inelastic, but the cost of marketing is high. Thus a relatively small decline in the price to consumers results in a relatively large decline in the price to producers. For example, a decrease in the price of canned peaches to consumers from 15 cents a can to 14 cents a can—a decrease of 6.7 per cent—ordinarily results in a decrease in the price to growers from $20 a ton to $9 a ton—a decrease of 55 per cent.

As stated above, this problem of changes and adjustments in production must be approached from the standpoint of the individual farm. A farmer, when endeavoring to determine what program of production will yield the highest return, must consider not only the prices he may receive for his products, but also the conditions on his farm—the physical adaptation of the different crops and livestock to the soil and climatic conditions, financial resources, and many other items.

If there were enough outlook workers with sufficient ability and knowledge to make the determination for every farm in the country, or to give individual assistance to every farmer in working it out for his farm, we would, of course, have reached our objective. But since in any local area or region there are a large number of farms with similar resources and similar production possibilities, it is not necessary that this determination be made for every farm. It will be sufficient if we can reach a correct conclusion as to the farming plan for the typical farms in each area or region.

It seems to me that these plans should be expressed in terms of the number of acres of the different crops and the number of the different kinds of livestock; the quantities of the different commodities produced, and their prices; the amounts of the different expense items that must be incurred; and the net income from the farm in the year, or years, ahead. Obviously, to determine which one of the many farming plans that might be put into practice on the typical farms in an area will yield the highest return, one must know what yields of the different crops may be expected, what livestock production may be expected, what the prices of the different cost factors will be, as well as the prices that may be expected for the products to be sold. Any farming plan, to be workable, must be a plan for several years, because it is impossible for a farmer to reorganize his farm every year. Yet the plan must be flexible enough to permit of

changes and adjustments that may be made necessary by year-to-year changes in prices and costs and such unforseeable things as crop failures due to drought.

In addition, our outlook program must include ways and means of getting this information on farming plans (conclusions as to the plans that will give the best returns in the years ahead) to the farmers in each area or region in a way that will be understood and *believed.* Many factors must be taken into account in reaching conclusions concerning farming plans if they are to warrant the confidence of farmers. It is especially important that the problem be considered from the point of view of the individual farmer and his resources, and that in reaching conclusions and making suggestions, all of the many factors which a farmer must take into account when deciding what to grow be considered and appraised by the outlook worker. Then we must be constantly on the job to see when changes in economic conditions, or improvements in the technique of production, or unforseen circumstances of any kind indicate that modifications should be made in farming plans. Obviously, farm management workers have an important place in such a program. But so do price analysts and workers in a number of other parts of the field of agricultural economics.

Turning to the problem of marketing, farmers often have opportunity to choose the time of marketing their crops and livestock. Grains, cotton, potatoes, and other staple crops may be contracted for sale in advance of harvest; they may be sold at harvest time; or they may be stored for sale at some future date. Livestock may be contracted for sale before they are ready for market. The livestock producer or feeder often can vary considerably the date on which he will place his stock on the market. Without a knowledge of the *outlook,* attempts to guess the course of the market will result in losses just as often as in gains, but with a knowledge of the forces of supply and demand as they are operating in the market at any particular time and of the probable future course of supplies and of demand, one should be able to judge with some degree of accuracy the best time to place his product on the market.

Farmers know, of course, that prices of most products are changing continually and many endeavor to regulate the marketing of their products so as to take advantage of these changes. But they have learned that no rule-of-thumb method is a safe guide, and many requests for information on the outlook for

marketing come to the workers of the state colleges and the U. S. Department of Agriculture from farmers who are acquainted with outlook work. Typical questions are: Shall I sell my grain at harvest time or store it for sale later in the year? What day or week will be best to sell my lambs or hogs? Shall I contract my wool for sale before shearing time?

As examples of the importance of such questions and the opportunities which outlook workers have to be of service to farmers in furnishing them information on the outlook for marketing, the following may be cited:

The price of No. 1 white wheat at Portland rose from an average of $1.34 per bushel in August, 1924, to $1.87, in January, 1925, a rise of 53 cents a bushel in 5 months. In contrast, it fell from $.88 in August, 1930, to $.66 in January, 1931, a decline of 22 cents.

The average farm price of wool in California rose from 28 cents per pound in April, 1927, to 35 cents in March, 1928. The following year the price was quite steady, averaging 34 cents in April, 1928, and 33 cents in March, 1929. But between April, 1929, and March, 1930, it declined from 30 cents to 18 cents. A study of the course of prices of these and many other commodities in recent years shows conclusively that in some years it would pay a farmer to sell early in the season and in other years to withhold his production from the market until toward the end of the season.

The outlook for marketing usually involves consideration of short-time fluctuations in prices—month-to-month, week-to-week, or even day-to-day—while the outlook for production involves long-term fluctuations—year-to-year changes, and trends over a period of years. Measuring the factors that influence these short-time fluctuations in prices is probably a more difficult task than measuring the factors that cause price changes from year to year. Similarly, judging the direction and extent of short-time changes is probably more difficult than judging the direction and extent of changes in average annual prices. Nevertheless, these changes do not "just happen." They are the results of forces which can be determined and measured. A complete outlook program will include research designed to determine and measure the factors responsible for short-time fluctuations in prices, as well as the longer-term trends. Collecting and disseminating continuously-up-to-date information regarding these price-influencing factors will also be a part of the program.

Benefits from short-time fluctuations in prices depend upon accurate judgment and prompt action. Even if the outlook program were developed to the point where information that would afford the basis for correct judgment were always available, many farmers who act *individually* in the marketing of their products would have difficulty in obtaining it promptly and using it to the best advantage. Farmers' marketing *organizations,* on the other hand, can utilize information on the outlook for marketing to great advantage in planning their sales policies so as to maintain equal pressure of their products on all parts of the market at all times.

I realize that I am outlining a very ambitious and far-reaching program, but all of the things I have enumerated must be included if outlook work is to serve the purpose that was in the minds of those who inaugurated it and that is now in the minds of those who are sponsoring and encouraging it.

Outlook work was inaugurated in the U. S. Department of Agriculture in 1923. The annual report of Secretary Wallace for that year said:

> Producers need information to guide them in making proper adjustments between the acreage planted to the various crops. The department began last spring to furnish this information. . . . A group of well-known economists and statisticians were invited to meet in Washington on April 20 . . . to prepare a statement on the general factors now underlying the agricultural situation with a view to furnishing all possible bases for intelligent adjustments of production to demand. This committee drafted a concise statement on the general economic outlook which it is believed has been of material aid to all agricultural interests.

This statement, the first outlook report, was limited to the discussion of domestic demand, foreign demand, wheat, cotton, tobacco, corn, and hogs. It was issued in mimeographed form, together with the "intentions-to-plant" report, and later was printed in *Weather, Crops, and Markets.* No further effort was made to bring it to the attention of farmers.

Secretary Wallace realized the importance of information on the outlook for marketing as well as on the outlook for production. On the same page with the statement quoted above from his report for 1923 is this:

> Producers also need information to guide them in determining when to sell their crops and livestock. This need the department is striving to meet by issuing promptly after harvest, as a supplement to the regular forecasts of production, an estimate of the quantity of each crop produced together with comparisons with previous years. In order to give a more complete picture, information concerning foreign production is also gathered and published.

The following year the workers in the Bureau of Agricultural Economics began the preparation of monthly reports on "The Price Situation," in which the recent trends in the prices of some of the more important agricultural commodities were reviewed and factors likely to influence the course of prices in the near future were appraised. The first report to be printed appeared in *Crops and Markets* in September, 1924. It contained statements concerning wheat, corn, oats, hogs, cotton, and the general level of farm prices. These monthly reports have been prepared regularly since that time. Now each report contains statements on 10 to 15 commodities. The reports are mimeographed as soon as prepared and distributed immediately.

Each year since 1923 the Department has prepared and issued an annual outlook report, devoted primarily to the outlook for production during the year just ahead. More and more commodities have been treated in the reports. In 1931 the report contained statements on forty commodities in addition to statements on domestic demand, foreign demand, credit, farm labor, equipment, and fertilizers, as well as a 5,000 word statement on "The Long-Time Outlook." The whole is a document of 91 printed pages of small type. Special outlook reports on individual commodities are prepared at intervals throughout the year.

Most of the state colleges have been sending representatives to Washington for several years to participate in the Annual Outlook Conferences, and most of the state colleges have been preparing and issuing state outlook reports for several years. Many issue monthly as well as annual reports, a considerable amount of space in the monthly reports being devoted to the marketing outlook. Large numbers of outlook meetings are held each year where the outlook reports are discussed with farmers. The county agents in most states take an active part in disseminating the information contained in the outlook reports and the conclusions stated therein. Last year the plan of holding regional outlook conferences was inaugurated.

Secretary of Agriculture Jardine and Secretary Hyde have encouraged and fostered the development and expansion of the work begun under the direction of Secretary Wallace. Outlook work, together with the research and extension activities related directly to it, has come to be one of the major activities of the Bureau of Agricultural Economics and the Cooperative Extension Service of the Department. The state colleges have been

taking a more and more important part, and now outlook work is a regularly organized and conducted activity in every state.

In contrast to the statement by Secretary Wallace in 1923, note this statement in the 1930 report of Secretary Hyde:

> Gathering and distributing facts to help farmers make adjustments to meet changing conditions in production and marketing is a major function of the department. . . . The agricultural outlook service has now been extended into every state and covers over 40 crops and classes of livestock. This year's outlook report, presenting facts on production and demand and indicating the probable market for the season's crops, was not only brought directly to more than 200,000 farmers at 4,200 group meetings, but was also used in special and follow-up radio programs which carried the information quickly to several million farmers.

The Federal Farm Board, from its beginning, has recognized the importance of outlook information in both production and marketing. When the annual outlook report for 1930—the first report following the establishment of the Farm Board—was published, the Farm Board issued a statement containing the following:

> Improved farm income requires planned production and effective marketing. . . . Wise production planning must precede effective marketing. . . . Planting and breeding operations should rest on the best possible size-up of the market outlook at home and abroad for a year or more to come. Such an appraisal is given in the *Outlook Report*. . . . The Federal Farm Board heartily commends this service to the farmers of the country and believes that it will contribute largely to increasingly intelligent farming operations and toward larger farm incomes.

The Farm Board also recognizes that the preparation and dissemination of outlook reports do not constitute a complete outlook program. The following is from the annual report of the Board for the year ending June 30, 1930:

> The Board recognizes that in order to obtain effective and appropriate readjustments in production . . . a very complex task is involved. The most profitable readjustments are different in different sections. The broad facts as to the outlook . . . and also more specific knowledge as to local applications of these facts as well, must be developed and brought home to individual farmers. The utmost cooperation of agricultural colleges, extension workers—federal and state—vocational teachers, and of bankers and business men, as well, must be effectively enlisted in the effort. Cooperative marketing associations and other farmers' organizations have a large part to play in this work.

In the earlier reports, both federal and state, much general advice was given concerning increases and decreases in acreage of crops and numbers of livestock, and farmers in general were often urged to contract or expand some line of production.

But when questions began to be asked, especially by state representatives at the national outlook conferences, as to where contraction or expansion should take place, and how much, many heated and fruitless arguments ensued, and thereafter recommendations for increases or decreases in production were harder to find in the national outlook reports. A similar trend has been evident in the state outlook reports. In recent years both state and national outlook reports have been containing more and more discussion of the *price* outlook—the trends in the supply of and the demand for the different commodities, prospective changes in demand and supply, and the probable effect of these changes on prices.

Note the difference between some typical summary statements from the *National Outlook Report* for 1931 and summary statements for the same commodities in the report for 1925:

CORN

1931—With prospects for only a slightly greater demand for corn and with much larger supplies in prospect, it is probable that prices during the season beginning November, 1931, will average somewhat lower than during the present season.

1925—An increased acreage in 1925 does not appear advisable.

HOGS

1931—Slaughter supplies of hogs during the remainder of the present marketing year will probably be smaller than during the corresponding period of 1930, but with a weaker demand for hog products, prices of hogs for the period will probably average lower than for the same period last year.

1925—A further reduction in production is highly undesirable.

DAIRYING

1931—An increased production of dairy products in 1931 is to be expected. Demand has been reduced by the business depression. The outlook is for continued low prices in 1931.

1925—Further expansion in dairying in 1925 seems inadvisable.

WHEAT

1931—The present very low level of wheat prices has brought into operation forces tending to cause an improvement, but despite this, another year of low wheat prices is in prospect for 1931. . . . A better balance between production and consumption is likely eventually to be reached at price levels that will average above those now prevailing in world markets, but will be lower than have prevailed during most of the last 10 years.

1925—Growers of hard spring wheat are cautioned not to increase production above domestic requirements.

Thus the outlook reports are tending more and more to give consideration only to *prospective prices,* just one of many factors that must be taken into account in arriving at a conclusion as to the best production program or farming-plan for a farm

or an area. When statements such as those quoted above are presented to local groups of farmers and the reasons back of the statements explained, the farmers come back with the questions: Will the prospective changes in supply and demand influence our returns in the same way that they will influence returns to producers in other areas? What should we do about it?

Such questions bring to the front the problems of alternative opportunities and changes in the productive programs of individual farms. The outlook reports contain very little information that will help in answering these questions. The federal outlook workers have "passed the buck" to the state workers. The foreword to the national outlook report for 1929 contains this: "These statements represent the national viewpoint, and in many instances must be modified to meet local conditions." The plan of holding regional conferences, such as this one, was inaugurated last year as a step toward the localization of outlook work, but in the regional outlook report for the southern states issued last December I find the statement: "These facts should be considered in the light of state and local conditions as presented by the workers of each state."

Farmers will continue to ask questions about the influence that price-making forces will have on the prices they may expect for their products in their locality, and they will continue to look to us for suggestions as to changes and adjustments in their individual farming programs. We have two alternatives. We can pass the buck on down to the farmers and tell them they will have to figure that all out for themselves; or we can develop the outlook program to the point where we can answer these questions.

Probably one hundred members of the U. S. Department of Agriculture spend at least a month every year in the preparation of outlook reports. A greater amount of time is spent by members of the state college group in preparing reports for their own states, and in helping to prepare the national and regional reports. A great deal of time and effort is expended by both state and federal workers in disseminating the information contained in the reports, and in bringing it to the attention of agricultural producers. Considerable sums of money are being used for collecting information on the trends of supply and demand for the agricultural products, both in this country and abroad, for use primarily in the preparation of outlook reports. Many workers, both federal and state, spend a major portion of their time in research to determine what factors have influ-

enced the prices of different products in the past and to obtain quantitative measures of these factors, with the aim of providing a better basis of judgment as to the effect of prospective changes in price-influencing factors. All agree that this time, money, and effort is well spent.

The next major step in the development of outlook work should, in my opinion, be to mobilize resources in a similar manner for work on the other phases of the program, with major emphasis on determining farming plans and programs that will yield the highest returns in the years ahead in the different agricultural regions of the country, and developing ways and means of getting the results to farmers.

EFFECTS OF PRODUCTION AND THE 1930 BUSINESS DEPRESSION ON FARM INCOME

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Bureau of Agricultural Economics

Major business and agricultural depressions that periodically sweep over the country tend to restore a more balanced sense of economic realities. During such trials we tend to learn again the lesson that sustained agricultural well-being depends on sustained industrial prosperity here and abroad. During the few years of sustained urban prosperity prior to the collapse in the last half of 1929—years when domestic demand conditions were relatively stable—it appeared to some that the farmers' problems were largely of their own making, with only minor influences due to industrial conditions. Some even attempted to prove statistically that most of the variations in farm prices and farm income are due to variations in supply. The events of 1930 and 1931, however, have again demonstrated how a business depression sweeping over the entire country drags farmers down to the despair of profitless production and the loss of their land just as it reduces millions of industrial workers to the dire want of the jobless.

The purpose of this statement is to point out a few specific influences of the 1930 business depression on agriculture, and to present certain facts of aggregate production, prices and income for the country as a whole which show fairly clearly how the great changes in general demand conditions, and not production, were the chief factors in the collapse in farm income in 1930 and 1931. These facts together with others that have to do with inflexible taxes, debts, operating costs; with competition between farmers of different regions, between farmers and unemployed city labor, and with foreign demand and competition and the vagaries of nature, point to the tremendous difficulties in the way of regional or national agricultural adjustments to demand conditions weighed down by national and international forces. Being practically insuperable, these difficulties lend reasonableness to the point of view, now frequently heard, that a solution of the present agricultural depression depends more on restoring industrial prosperity than on adjusting agricultural production to the reduced demand.

Some of the effects that a business depression can have on

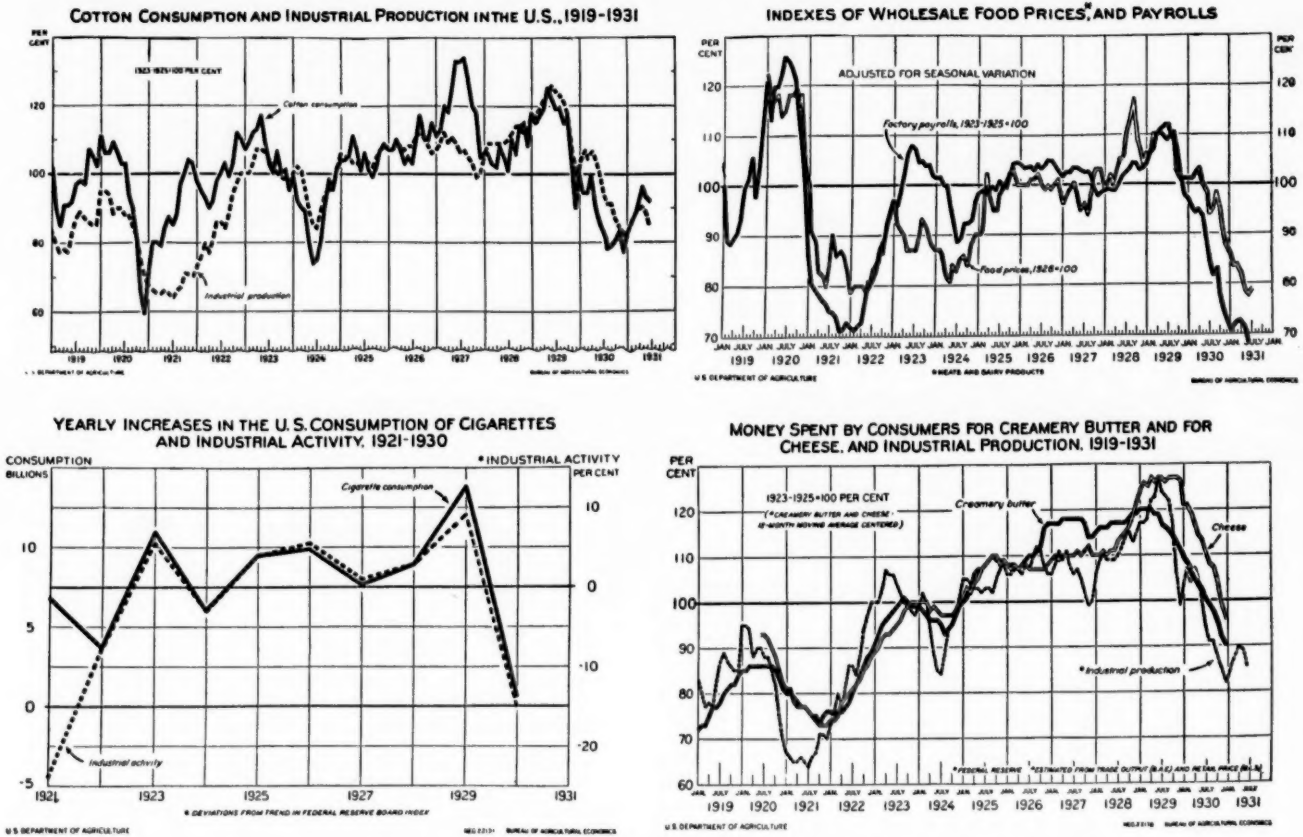
COTTON CONSUMPTION AND INDUSTRIAL PRODUCTION IN THE U.S., 1919-1931
PER CENT
1923-1925=100 PER CENT
Cotton consumption
Industrial production
INDEXES OF WHOLESALE FOOD PRICES* AND PAYROLLS
ADJUSTED FOR SEASONAL VARIATION
Factory payrolls, 1923-1925=100
Food prices, 1926=100
U.S. DEPARTMENT OF AGRICULTURE
YEARLY INCREASES IN THE U.S. CONSUMPTION OF CIGARETTES AND INDUSTRIAL ACTIVITY, 1921-1930
CONSUMPTION BILLIONS
*INDUSTRIAL ACTIVITY PER CENT
Cigarette consumption
Industrial activity
*DEVIATIONS FROM TREND IN FEDERAL RESERVE BOARD INDEX
MONEY SPENT BY CONSUMERS FOR CREAMERY BUTTER AND FOR CHEESE, AND INDUSTRIAL PRODUCTION, 1919-1931
1923-1925=100 PER CENT
(*CREAMERY BUTTER AND CHEESE, 6-MONTH MOVING AVERAGE CENTERED)
Creamery butter
Cheese
*Industrial production

FIGURE 1.—There is a striking resemblance between certain indexes of industrial activity and price or consumption indexes for certain agricultural products.

agriculture stand out very clearly as one reviews the recent facts as to production, prices, and incomes. Examine almost any major line of agricultural production and you find the havoc played on farm income by the reduction in domestic or foreign demand brought on by the 1930-31 depression. In many instances farmers have failed to obtain the higher prices they are entitled to as compensation for small crops and, where production has been abundant, prices have gone to levels well below production costs, because of conditions outside of the control of agriculture.

In the South, for example, farmers produced in 1929 and 1930 less than average cotton crops, but as industry everywhere slowed down[1] and unconsumed cotton piled up in our warehouses and at foreign concentration points, prices dropped and continued to drop, reaching 7.7 cents at the farms in June, 1931, compared with 17.9 cents in June, 1929. As if decendants of Job, cotton farmers in the fall of 1931 were additionally afflicted by favorable growing conditions which sent prices down still further to 6.3 cents in August.

In the central potato areas, farmers were inopportunely blessed in 1929 and 1930 with small crops which ordinarily bring them much higher returns than large crops, but the turn in the industrial situation from prosperity to depression undid the usual price benefits that offset the niggardliness of nature. In the Corn Belt too, where the usual relations between supply and price should have sent corn prices soaring in 1930 as the drought burned up the corn fields, farmers saw the central markets fail them as the usual venturesomeness of dealers and hog feeders shriveled with the decline in business. Also, in the livestock branches of agriculture, producers of meat animals and of dairy and poultry products have experienced the lowest prices of many years, not because supplies were too abundant but because of the great shrinkage in the buying power of the average consumer.[2] Finally, in the domestic wheat sections, producers have suffered from a most unusual combination of factors, most of them completely outside of their own range of influence. Among these factors are: ample domestic stocks in the face of depression, mounting foreign competition, a worldwide decline in the

FIGURE 1.—There is a striking resemblance between certain indexes of industrial activity and price or consumption indexes for certain agricultural products.

[1] See Sec. 1, Fig. 1, for the effect of domestic industrial activity on the industrial consumption of cotton, and Sec. 2 for the relation between the yearly changes in cigarette consumption and industrial activity.

[2] See Sec. 3, Fig. 1 for the effect of the money incomes of consumers (factory payrolls), on food prices, and Sec. 4 for the relation between the money spent for dairy products and industrial activity. As in the case of tobacco, there has been an increase in the domestic demand for dairy products in recent years, which has varied with industrial activity and the money incomes of consumers.

money purchasing power of consumers dragging the general average of all prices downward below prewar levels and the price of wheat to the dark levels of mediaeval ages. At present (September, 1931) the Northwestern farmers are faced with the calamitous combination of these low prices and a crop failure while the winter wheat farmers are in the somewhat more tolerable but very unpleasant situation of having to give their

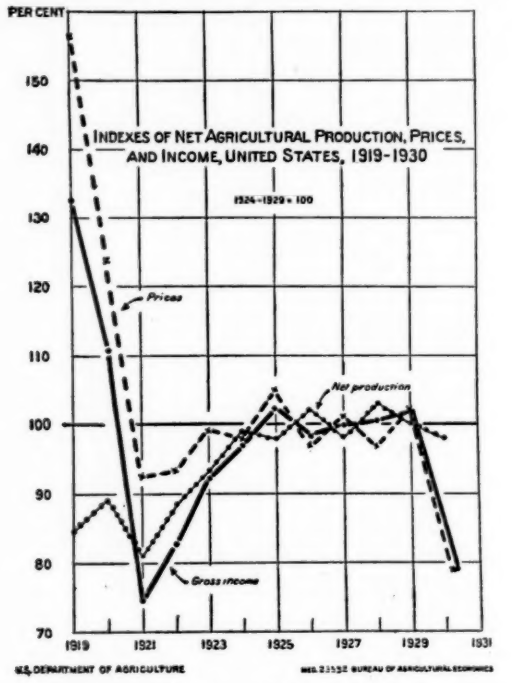

FIGURE 2.—Indexes of net agricultural production, prices, and income, United States, 1919-1930.

bumper crops away for less than 30 cents per bushel, compared with prices well over a dollar in recent years.

These diverse conditions in different branches of agriculture may be conveniently summarized by means of indexes of production, prices, and income, so as to show the effect of the depression on agriculture as a whole. In Figure 2, they are shown separately for crops and for livestock and livestock products for the twelve years, 1919-1930. In each case the indexes of production represent net production (quantities sold or available for sale and consumed in the farm home). The price indexes are

based on prices received by producers and the indexes of gross income are derived from the quantities included in the production indexes multiplied by the prices used in the prices indexes. The indexes for the two groups of products, crops and livestock, for the United States, as well as similar ones that will be referred to later for three states (New York, Illinois, and California) are available at present only for the seven-year period, 1924-1930.

Consequently, any observations made here concerning the relative importance of production and price variations in changes in income, or of the relative importance of production and general demand conditions in price variations, will be subject to the understanding that they pertain to the facts of this period only —that the relative importance of production and demand factors in farm income may be found to be somewhat different when additional data for 1931-32 and for years prior to 1924 become available.

The variations in production, prices and demand as factors in farm income for the United States during the 12-year period, 1919-1930, have been of variable importance. During the first three years of this period, when farm incomes dropped from 132 per cent of the 1924-1929 average in 1919 to 75 per cent in 1921, price and not production changes were the chief factors. With an increase in production in 1920, prices and income declined, but it was the forces of deflation that were then in progress and only to a small extent the increase in production that turned post-war farm prosperity into post-war depression—as may be seen from the fact that in spite of the great reduction in output in 1921, prices and incomes declined still further.

During the next three years, 1922-1924, the improvement in gross income from 75 to 97 per cent of average was brought about chiefly by a rise in production from 81 to 98, and only partly by a rise in prices from 93 to 97. During the following period, 1924-1929, gross incomes were relatively stable as a result of production variations being largely offset by price variations.

Since 1929, the world-wide price decline accompanying the business depression, the falling off in domestic and foreign demand and unsettlement of financial conditions, have again reduced farm incomes as they did in 1921.

In order to study the production, price, and income relations since 1924 in somewhat greater detail, the data for 1924-1930 shown in Figure 2 have been reproduced in Figure 3, together

with production, price, and income indexes for the two component groups, crops and livestock.

In spite of the great variations in the yearly production of individual crops and of moderate variations in the output of livestock and livestock products, the aggregate net farm production for the United States has not varied greatly during the 7-year period 1924-1930. (See Fig. 2.) Expressed as percentages of the average for the period 1924-1929, total net production amounted to 102 in 1926, the year of the record cotton crop, and 103 in 1928, the year of large wheat and fruit and vegetable crops. The lowest aggregate volumes were produced in 1925, 1927, and 1930, when they amounted to 98 per cent of average. The difference between the year of largest and smallest output is only a difference of 5 per cent.

On the other hand, the composite of price variations for the first six years of this period has been somewhat wider, ranging between 105 in 1925 for the 98 per cent output of 1925 and 97 for the 103 per cent output of 1928. As shown graphically in the accompanying chart, the usual inverse relation between production and price was maintained for the period 1924-1929, but in 1930, when output declined to 98 compared with 100 in 1929, the price index dropped to 79. For the 1930 production, prosperous conditions might have been expected to maintain prices at a level about 30 per cent higher. This is indicative of what, in the aggregate, the 1930 depression, (through domestic purchasing power, financial conditions, general price level movements, and foreign competition and demand) did to the farmers' prices in the United States.

Turning to the variations in gross income, the inverse and partly offsetting variations of production and prices produced a fairly uniform level of gross income for the six years 1924-1929. With prices averaging 105 in 1925 and production 98, income amounted to 102 per cent of the 1924-1929 average. In 1926, with prices at 97 and production 102, income averaged 98, or four per cent lower than in 1925. In the next three years, income increased slightly, reaching 102 in 1929. But in 1930 the drop in prices to 79 for a production volume of 98 reduced income 21 per cent below the average and 23 per cent below that of 1929. Clearly the farmers' plight in 1930, as contrasted with the more favorable years 1924-1929, was not a matter of overproduction, but part and parcel of the abrupt drop from general prosperity

to one of general depression in the consuming areas of this country and of the rest of the world.

A similar situation developed in the post-war depression of 1920 and 1921. Production in 1921 declined 9 per cent from the 1920 aggregate, but the overwhelming forces of deflation and depression brought farmers a gross income for the smaller output of 1921, 33 per cent smaller than for the larger output of 1920. The results of the following season again demonstrated how general demand conditions can upset the normal relations between supply and price, for in 1922 production *increased* 10

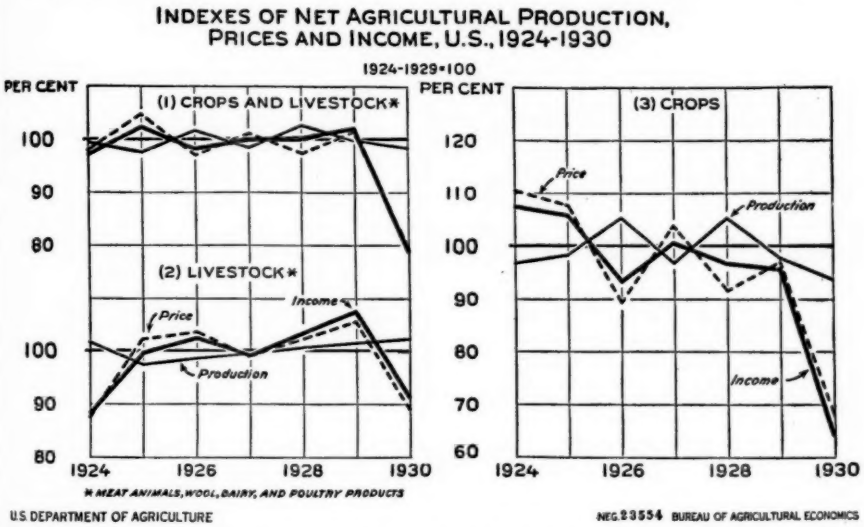

FIGURE 3.—Indexes of net agricultural production, prices, and income, United States, 1924-1930.

per cent over that of 1921, but with an improved business situation, prices averaged about the same as for the 1921 output, and gross income consequently rose by about 10 per cent. From these facts it can hardly be argued that as we go abruptly from prosperity to depression, a mere reduction in output would increase or maintain the farmers' gross returns.

Analyses similar to the above made separately for crops and for livestock and livestock products lead to the same observations, though there are some interesting differences. (See Sec. 2 & 3, Fig. 2.)

The index of production of livestock and livestock products (meat, animals, wool, dairy and poultry products) shows a strik-

ing degree of stability from 1925 through 1930, produced in part by fortunate dovetailing of cattle and hog slaughter. After declining from 102 in 1924 to 97 in 1925, the aggregate of livestock production crept up slowly to 102 in 1930 and equaled the 1924 volume. The price index, after rising from 90 in 1924 to 104 in 1925, partly because of the reduced supply and partly because of recovery from 1924 business recession, then continued in a series of variations quite distinct from that of the trend in physical volume. Other factors evidently were causing these variations in the composite price average from 104 in 1926 to 99 in 1927, then to 106 in 1929 and down to 89 in 1930. With supplies maintained at practically an even level, these price variations produced almost comparable variations in the farmers' total returns from the sale of livestock and their products. These variations in prices and income bear a resemblance to variations in domestic industrial activity sufficiently striking to leave very little doubt as to their cause. Like the movements in prices and income, industrial activity advanced from moderately depressed levels in 1924 to a level about normal in 1926, then receded slightly in 1927, reached a peak in 1929 and declined in 1930.

If we analyze the separate influences of production and industrial activity on the composite of prices of livestock and their products, we find that the variations in production during the seven years' 1924-1930, are responsible for only a slight portion of the variations in the annual price level or in income while most of the variations are due to the shifts in domestic demand, the latter being about two and a half times as important as the small shifts in production for this period.

In crop production as well as in crop prices, the variability has been greater than in livestock production and prices. In Figure 3, Section 3, the aggregate of crop output is related to a composite of crop prices received during the crop year when marketed. Thus, for crops produced during a calendar year, but sold during a crop year, say from July of one year through June of the next, the prices relate to the crop-year period of sale. The greater decline in crop prices in 1930-31 than in livestock prices in 1930 is partly due to the deepening of the depression during the 1930-31 crop marketing season.

In 1924 and 1925 crop prices averaged much higher than one would expect for production only 2 and 3 per cent below average. These high levels reflect the high prices of grains brought about

by a world shortage of wheat and a domestic shortage of corn in 1924. The high prices in 1925 were due in part to very small domestic crops of wheat and potatoes. The increase in the production index in 1926 is due to a record cotton crop, a record apple crop, and larger grain crops, supplies of the latter being larger also in foreign countries. Small fruit and vegetable crops, and a small cotton crop lifted the average of crop prices in 1927, to be lowered again in 1928 by large fruit and vegetable crops and abundant grain crops. In 1929, small fruit and vegetable crops lifted the average of crop prices once more; then came 1930 with crop production reduced partly by a great drought to 6 per cent below average as the business decline here and abroad continued to lower levels to the end of 1930. The decline in prices for crops from 110 per cent of average in 1924-25 to 68 per cent in 1930-31 together with a lower volume of production in 1930 than in the first two years of this period, dragged incomes down from 107 to 64.

There is a striking contrast between the variations in income from livestock, dominated very largely by domestic business conditions and the variation in income from crops, the major items in which (wheat, cotton, and tobacco) are so largely influenced by international supply and demand conditions. The shift from crop incomes 107 per cent of average in 1924 and 1925 to 64 per cent in 1930-31 which cannot be attributed to domestic production (since it was even lower in 1929 and 1930 than in 1924 and 1925) shows the great dependence of income from the major cash crops on demand and general financial conditions in the domestic and foreign markets.

Part of the variations in national farm income during major depression is, of course, offset by variations in prices paid by farmers so that the "real" gross income changes are not as great as they appear. If the gross income data (shown in Fig. 2) are adjusted for the changes in prices paid by farmers for commodities usually bought by them, it still appears that it is the major depressions of 1920-21 and of 1930 which have been the chief factors in producing the great changes in farm income through creating variations in prices and demand that far outweighed the effects of lower production in 1921 and 1930.

The conclusions as to the relative importance of production, prices, and general demand conditions for agriculture as a whole, do not apply except with considerable modifications to any one region or state, or commodity or farmer. In these instances quite

different problems are involved. Production adjustments for a region in relation to depression periods must take into account in addition to the demand factors, the shifts in production in other competing areas, which in the national problem become offsetting factors that produce stability in the aggregate. In an individual commodity, production adjustments must be considered in relation to the production and price shifts in competing products. In the adjustments of the individual farmer to depression conditions, many other detailed problems are involved in addition to those already mentioned. Although it is not the purpose of this paper to go beyond pointing out that during major depressions even great reductions in production have not sufficed

TABLE 1.—INDEXES OF FARM GROSS INCOME, PRICES PAID BY FARMERS, AND PURCHASING POWER OF GROSS INCOME 1919-1930

1924–1929 = 100.

Year	Gross Income	Commodity Prices Paid	Relative Purchasing Power
1919	132	132	100
1920	111	133	83
1921	75	100	75
1922	83	98	85
1923	92	99	94
1924	97	99	98
1925	102	102	100
1926	99	100	98
1927	100	99	101
1928	100	100	100
1929	102	100	102
1930	78	94	83

to prevent farm income losses due to all the complex factors beyond the farmers' control, it may be worth while to point out some preliminary observations on the production, price, and income relations for three selected states. These are illustrative of regional differences which we hope to develop more fully later.

If we examine production, price, and income indexes for crops and livestock for three states geographically well separated, New York, Illinois and California, some striking differences appear. In these three states, the production, price, and income relations for livestock are much more nearly similar to those observed for the country as a whole than are the relations for crops. We shall therefore deal briefly only with the latter.

In New York State a marked inverse relation shows up for the years 1924-1930 between New York crop production and crop prices which, by themselves, have tended to offset each other to produce a fairly uniform income, but other factors have operated

to produce a declining trend in income. While during this period annual production variations resulted in inverse price variations, a downward trend in New York production has not been compensated for by a rising trend in prices, with the result that as production declined from about 113 per cent of the 1924-1929 average in 1924 and 1925 to about 90 per cent in 1929 and 1930, gross income declined to about 87. This decline in income for the crops of New York State represents a decline in demand due to competition from other regions, such as the great expansion in potato production in Maine and Idaho, while New York production tended downward. We apparently have here an illustration of a uniform income irrespective of the size of the aggregate crop output, with the competition from other regions the chief factor in creating a decline in gross income. Incidentally, an upward trend in income from livestock and livestock products has tended to offset the decline in crop income except in 1930 when both were affected by the general depression.

For California, with a list of crops quite different from that of New York, we also find the suggestion that large and small crops bring about the same income through inverse price changes, but instead of a declining trend in crop income as was found for New York, there is here a rising trend from 1924 to 1929 with a sharp decline in 1930, apparently due to the business depression. Probably a combination of increasing demand for California fruit crops with declining production of certain crops elsewhere may explain the rising income trend from 1924 through 1929.

The relations between crop production, prices and income for Illinois differ very sharply from those of New York and California. Instead of finding the definite influence of local production on local prices, as is evident in New York and California, the Illinois production appears to have very little influence on local prices. In other words, crop prices in Illinois are largely the product of conditions in competing areas for domestic crops like potatoes and corn, and of both domestic and international or foreign conditions for wheat and other grains. By far the greatest factor in crop income variations for this state since 1924 has been production which bears only slight relation to local prices. For the three years 1925, 1928, and 1929, production averaged respectively 115, 107, and 100 per cent of the 1924-1929 average, while prices ranged between 94 and 96 per cent. Incomes consequently declined from 109 in 1925 to 102 in 1928

and to 94 in 1929. In 1927, production dropped to 77 and with prices rising only to 106, income dropped to 81 per cent of average. In 1930, in spite of a 20 per cent drop in production, prices dropped 22 per cent and incomes nearly 40 per cent. In a state like Illinois, then, large crops may bring either large or small incomes depending mostly on production conditions in other states and abroad and the business and financial conditions of the country.

These facts are indicative of only a few of the problems that may be dug up once we begin to look beneath such simple, innocent phrases as "adjusting national and state production to demand," or "producing less and getting more." We have said nothing about weather and biologic and farm management considerations as factors in aiding or hindering such adjustments; or about the effects of adjustments on other industries and on business in general. The problems and difficulties become even more numerous and complicated as we go from national to regional, to state, and to individual farm adjustments. In this article we have attempted to call attention chiefly to recent production, price, and income relations for the country as a whole and particularly to the fact that in periods of major depressions, a reduction in total farm output has not accomplished the miracle of restoring a profitable farm income level because of the overwhelming price depressing influences that were then in operation. Experience indicates that lifting agriculture out of a depression when all industries are depressed, calls for nothing short of a restoration of general prosperity.

WHO PAYS THE TARIFF DUTIES?

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Back in the days of the Cleveland campaigns, the protectionist orators told the voters that one of the desirable features of the tariff was that the foreigner paid it. The moral consciences of the electorate were not supposed to be offended by the niceties of the question on the grounds of fairness. It had seemed that this argument in favor of tariff duties had fallen into disuse, until revived by the Grundy doctrines of the past few months. The implications of the case are such that it would seem desirable to discriminate with care between the payment of a sum of money into the treasury and the economic disadvantage to any people or group due to the erection of barriers between them and their markets. We need every bit of clarity available on the arguments destined to rage around the tariff stronghold, and, therefore, the more unmistakably we state the case, the better. To admit, or appear to admit, that the foreign shipper of goods into this country contributed to our revenues by payment out of his own pocket is to hold some portion of our voters in line in support of a tariff which would be less pleasing to them if the whole truth of the matter were understood. Also proponents of railway freight increases are eager for statements to the effect that since the consumer pays the freight the producer has no particular concern in changes made in the rates. More careful terminology, and more elaborate explanations of the effects of freight or tariff charges on all parties concerned will serve a useful purpose. Nevertheless, a difference of opinion has arisen on several occasions among economists themselves, while between economists and politicians, there has never been agreement.

There is a close analogy between the question as to who pays the tariff duty, and the question as to who pays the freight on farm produce. A few years ago the writer gave a paper before the American Farm Economic Association in which he undertook to elucidate the rather obvious fact that the consumer does, and must, pay the freight on produce arriving in the market under ordinary competitive conditions, that is to say in a market in which prices have become adjusted to transportation conditions and costs. Under changing costs the farmer or other producer for a time acts as the buffer, and gains the advantage of reduced rates, or suffers a loss on increased charges.[1] At the same time, it

[1] Journal of Farm Economics, July, 1922.

was admitted that the farmer at the producing end of the line would be prone to think that he was paying the freight. Indeed, the actual payment of freight has all the appearance of being made by the farmer who, for example, ships hogs from Iowa to Chicago, or wheat from Montana to Minneapolis. The freight is normally actually paid by the receiver of the produce at the terminal market, and whether more or less is deducted from the remittance made to the shipper. Moreover, should it happen that the produce consigned should fail to sell for enough to cover terminal charges and freight, the consignor is held responsible. Thus, a few years ago, western sheep producers in an occasional instance were called upon to transmit, in the wake of a carload of emaciated ewes, a payment to cover a deficit occasioned by the freight charges. Here the producer certainly paid the freight, or at least some portion of it. Suppose, however, that the car of sheep had brought just enough to cover the commission, yardage, freight and incidental charges, it might be held, improperly, that neither the producer nor the consumer paid the freight, yet it was paid. Here, as usual, the bill would be paid by the consumer. Such consumer might be the purchaser of the wool, pelt, and fertilizer ingredients of the carcasses. The grower would be left to realize that, while the reduction of the freight charge was made on the account sent him, it merely meant that at the western end of the line the sheep had no value. The case is not particularly extreme. Again and again, potatoes are not worth the cost of carriage to market. The same is true of low-grade apples or lettuce, and would often be true of citrus fruits were the organizations handling them not shrewd enough to keep the excess off the main market. Surely no one would contend that the farmer pays the freight on the portion not shipped, yet his loss is obvious in the lack of sale. When he ships goods which will just pay the freight and no more, his loss is the same as though he had not shipped at all, but let it go to waste at home.

Elementary though this reasoning seems, one of the leading economists of the American Economic Association remarked, in a discussion following the reading of the paper, but not reported, that the paper was interesting, but after all had succeeded in proving that A equals A, since it makes no difference to a farmer whether he pays freight or loses from the price the amount required to pay it. Of course, nobody would claim that from the economic welfare standpoint it could make any difference to a

producer, farmer or manufacturer, whether he bore or passed on any specific burden so long as he had nothing left after the transaction was past. Quite of another character is the question at the present moment as to the economic effect of the proposed increase in freight rates as applied to agriculture.

In this matter of the freight rates we are not at all concerned with the niceties of words. We are concerned with economic effects. It is claimed that since the consumer pays the freight it must be a matter of indifference whether the freight charges are low or high. On the contrary, it may make all the difference between prosperity and failure to the farmers as producers. For instance, in 1921 the hay in Idaho was worth almost nothing because of the low price in the terminal markets to which it had to go, if shipped at all, and the high freight costs. A lowering of the freight charges gave the consumers of hay an opportunity to pay a few dollars a ton for the hay in Idaho, pay the freight, and still find the purchase worth while.

An increase in freight rates, held by interested parties to be a matter of indifference to farmers, since the consumer pays it, may be a vital consideration to the farmers in question in spite of the logic of the above contention. The logic is no doubt good enough when stated with all the necessary implications and limitations. The consumer pays the freight, but an increase in freight charges may be the cause of a remapping of agricultural production, some producers going out of business; others nearer by, expanding output. At the same time the costs, and the price, may have increased, and a change taken place in the demands of the consumers. Thus to say baldly that the consumer pays the freight may be literally true, but it begs the whole question as to the merits of a change in freight charges. We are interested much more in the economic welfare of the people concerned than in the abstract question of how things shape themselves in periods which stretch out into the indefinite future. Adjustments to changed economic forces are not made in a day, nor in a decade. While, logically, the farmer does not pay the freight on goods produced on his farm, a vast number of farmers, dependent on transportation facilities, suffer a loss in price due to increased charges, and immediately, measured by the amount of the increase. Different relationships may develop later.

The payment of the tariff duty is analogous. The consumer pays it, though he does not know when or how or even that he pays, in the general run of events. The farmer thinks he pays

the tariff on goods which he sends into a foreign country over a tariff wall. Professor Black states, "It will . . . be argued both by the Cuban sugar producers and by the consumers in the United States that they [each, respectively] pay the increased differentials arising from the higher sugar duty."[2] Most assuredly, they will both claim to pay the duty. The question is on the merits of the claim, or more particularly, just what is meant by the language used in setting the claims forth. In the same connection, Professor Black goes on to say, respecting a differential of $1.50 per hundred in the price of feeder cattle between this country and Canada, such amount being the difference in prices attributable to the tariff: ". . . the Canadians pay most of the differential. . . ." One would not assume that Professor Black can really think that the Canadians ultimately pay the tariff charge. What happens is that, whereas they at one time could sell their cattle in the United States at a given price, they now are obliged to take less because of the increase in the tariff charge. Would it not be more logical to say that the market for Canadian feeder cattle in the United States had weakened from the sellers' standpoint by the amount of the tariff—as compared, of course, with a free trade market assumed to have previously existed? Let us assume that feeder cattle just ready to cross the line into this country to have been worth, at a certain time, $8.00 per hundredweight. The Canadian producer received this amount, ignoring all questions of expenditures in bringing the cattle to the point of importation. Next assume the imposition of a duty of $1.50 per hundredweight. Who pays it? If an American importer buys the cattle on the Canadian side of the line, he pays, i.e., literally hands over, the amount of the duty to the customs collector. The seller will, therefore, receive $6.50 per hundredweight, or a dollar and a half less than formerly. The American consumer, assuming that the domestic price is not appreciably changed by the tariff, pays as before, $8.00 per hundred, but he pays it in the ratio of $6.50 to the Canadian producer, and $1.50 to the United States government for the privilege of buying from a foreigner not, in this case, as an added cost, however. The Canadian producer pays no tariff, but he gets less for his cattle. The two amounts are identical in magnitude, but one is a payment to a collector; the other is a subtraction from a former price, or it might be called a fall from a higher to a lower price level, due to a change in market conditions. Under the hypotheti-

[2] Journal of Farm Economics, January, 1930.

cal case, the Canadian would not at any time have the $1.50 with which to pay the duty. The bulk of the Canadian cattle are sold in the Canadian market for home consumption. Moreover, they are sold at a lower price on account of the United States tariff. Will anyone claim that in receiving the $6.50 price to which the cattle have fallen from $8.00, the sellers are contributing $1.50? Or, go a step farther and assume that the tariff is raised to $4.00, and proves prohibitive. Our prices at home might be raised conceivably, and we be compelled to pay our producers a higher price. Would the Canadian producer still be paying the differential?

If a housemaid at one time gets $10 a week for her work, and is later obliged to accept $8.00, she can hardly claim to be contributing $2.00 a week toward the purchase of food for the household. Neither could she make good such a claim were she regularly paid by means of a ten-dollar bill from which she returned two dollars to the housewife in change. She might perhaps have a just complaint on the grounds of unfair treatment.

What we must do, if this matter is to be understood, and it would hardly seem possible that there could be any deep-lying difference of views, is to arrive at a conclusion as to what is meant, respectively, by payment on the one hand and a failure to receive a usual or desired reward on the other. The latter is a kind of cost, no doubt. It is not a payment.

A similar and perhaps a clearer case, illustrating the alleged payment of the tariff by the foreign producer, is furnished by Professor Taussig.[3] Under reciprocity provisions, a duty was imposed on coffee from Venezuela, shipped to the United States. Had it gone into effect, in view of the fact that we were getting nine-tenths of our coffee supply elsewhere, it is clear that the duty would not have resulted in an increased price on ordinary coffee, similar, for example, to coffee coming from Brazil. In the language of Professor Taussig, "The Venezuelans must either sell their coffee to us, at a price lower by the amount of the duty, i.e., they must pay the duty or must send their coffee to another market." Here again we have the question as to the identity of making a payment, or taking a lower price. Under the statement of the case, the government made the entrance of Venezuelan coffee into our markets conditional upon the payment of a tariff duty. Again, it becomes a question as to whether the coffee is thrust into the country by the outside producer, or whether the buyer within the consuming country is the active agent in the

[3] Taussig, F. W. *Free Trade, the Tariff and Reciprocity*, p. 126.

transaction. By all means, it is more logical to assume that the buyer initiates the bargain. With a duty imposed on the coffee in question, the buyer may properly be viewed as paying, say two cents a pound, to the Federal Government for the privilege of buying coffee at eight cents a pound from the Venezuelans, instead of at ten cents from Brazilian dealers. In each case the cost is ten cents, and it is paid by the buyer who may be considered the consumer. The Venezuelan grower pays the tariff only in a nominal sense. He really sells in a market in which his goods will bring a lower price than before the barrier was erected, and he bears, in a real sense, the burden of the tariff charge if he sells in our market. But this whole discussion of a tariff on a tenth of the coffee importations is gratuitous, since it must be assumed that we buy at the world price, and that Venezuela would not sell below the world price. Should we put a tariff on all coffee our consumers would pay it. We might, or might not, use the same amount of coffee as before. If we used less, the world price might be lowered. The consumer would, in this case, pay the tariff, but not the full amount named in the schedule, since the home price would not be raised by that amount. The burden would be divided between the grower, who would take a lower price, and the consumer, who would pay a higher price. Immediately, while the supply remains unchanged, the grower might be obliged to stand the whole impact, taking a price lower by the amount of the tariff. Later, the probable lessened supply would shift some of the burden to the consumer, and he would pay. The producer would suffer in part a loss of market advantage, but would not pay the tariffs imposed by the importing country.

Assumptions of such tariff cases as the above instances on Venezuelan coffee and Canadian cattle, may be good in that they might and do occur, but they are exceptional, and trifling as applied to the general tariff controversy. Tariffs, at least ours, are intended to raise domestic prices; if they do not do so, they fail of their purpose. If prices are increased, and effective, the tariff is tantamount to a requirement that we, as consumers, first pay to the government a charge for the privilege of buying in the world market, or, of buying at an augmented cost, from protected home producers.

A clear, though erroneous statement, implying an answer to the question as to who pays the tariff, was recently made by Señor Don Orestes Ferarra of Cuba. He declared: "Cuba pays one-fourth of the American tariff."[4] This is on the untenable

[4] *Annals of the American Academy*, July, 1929.

assumption that the two cents which he thinks his people pay is not paid by Americans, and that without the tariff the price of sugar would be as high as it is now in this country, or at least not as much lower as the amount of the tariff—wholly groundless assumptions. There is more reason to believe that the price would fall to the world level and that very little more sugar would be used than at present. Even should it be proved, or assumed, that the price at present is higher by the exact amount of the tariff, it does not follow that the Cuban grower is paying the duty, nor that he is taking less for his product than he would receive under free trade. To what extent our action respecting sugar duties affects world prices of sugar is too complex for discussion here. It is, however, of importance to the Cuban producer. Just what would happen to the demand with the duty removed, no one knows. But in any case, we pay the duty after first paying the world price for the sugar, a price which would presumably be changed very little by a removal of the tariff wall. To the extent which our restrictions lower the world price, the Cuban suffers a lack of opportunity which might otherwise be his. His income may be depleted a trifle, but his contributions to our treasury are mythical. Again, the economic disadvantage of a tariff to a producer outside this country may be real enough, but it does not constitute a payment to the country imposing the tariff.

FARM ACCOUNTING INVESTIGATIONS IN SWITZERLAND

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Research in the field of agricultural economics in Switzerland is conducted by the "Sekretariat" of the Swiss Farmers Union.[1] This farmers' organization has, in addition to its primary objective (the political welfare of its constituent group), the additional objective of determining in a scientific manner the relationships affecting Swiss agriculture and the facts stressing the agricultural situation. How these, when determined, are to be used is perhaps a matter of expediency.

The initiation of the farm accounting investigations of the Swiss Farmers' Union is bound up with the efforts to establish the union and the efforts to give to Swiss agriculture a voice, particularly one that can be heard in politics. The growth of industry (at present Switzerland is one-fourth agricultural and three-fourths industrial) has been viewed with alarm by the friends of agriculture and those interested in various aspects of Swiss national life. The fear of depopulation of the outlying regions through agricultural competition from abroad, the contribution of recruits for the city, the desirability of retaining the thrift, economy, and industry of the rural groups, and the desire to keep alive Swiss national customs all are given as reasons for "bolstering up" Swiss agriculture.

Although it would seem from the standpoint of comparative advantage that agriculture in Switzerland might be allowed to decline in favor of her industry and in favor of the greater agricultural opportunities existing elsewhere, it is actually kept at a high pitch of intensity through economic friction, particularly through legislative means. This state of affairs is due in large part to the power wielded by the Swiss Farmers' Union.[2] The

[1] The writer insists upon a free translation of "Union Paysan Suisse" or "Schweizerischer Bauernverband" as "Swiss Farmers Union" instead of "Swiss Peasants Union," because the term "peasant" denotes and connotes something undesirable to many persons. After a sojourn of eight months in Switzerland, the writer has come to regard the small land operator of Switzerland as a "farmer" and not a "peasant." Despite his small land holdings, he has a far greater right to the title of "farmer" than have many so-called farmers on much larger land holdings in the United States.

[2] The membership of the Swiss Farmers' Union for 1930 is reported as 391,600. Although this, no doubt, carries in part an urban contingent, the total membership is actually large if compared with those gainfully employed in agriculture and even when compared to the total agricultural population.

Total Swiss population (1920)	3,880,320
(Agricultural population, 26.96%)	
Total gainfully employed in agriculture (1920)	492,306
Same estimated for 1927	472,000
Membership, SFU, 1928	392,000

Wirtschaftliche und Socialstatistische Mitterlungen
Heft 7, 1928; *Jahresbericht des Schw. Bauernverbandes* 1928

"Office of Farm Accounting Investigations" (Rentabilitätserhebungen)[3] of the Swiss Farmers' Union is the particular agency entrusted with the task of gathering the data relative to the economic status of Swiss agriculture. These researches were instituted in 1899 following a decision of the Federal Parliament instructing the Department of Agriculture to develop such investigations. The Department requested the newly organized Swiss Farmers' Union (1898) to undertake the task. The program called for:

1. Simple farm accounting on eight ordinary farms for one year.
2. An investigation of the agricultural situation in an entire community, the results to be published as a monograph.[4]

Accordingly, ten farmers were instructed in the procedure of farm accounting. Of these, nine completed the year's work. Due to certain internal difficulties, the Federal Parliament decided to abandon the project of the community study, but the farm accounting investigations were pushed to a conclusion. The results obtained were considered so satisfactory that the Sekretariat of the Swiss Farmers' Union proposed a still more comprehensive program.[5]

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[3] The "Sekretariat" of the Swiss Farmers' Union includes also an "Office of Price Information," an "Office of Land Value and Appraisal," an "Office of Agricultural Engineering and Buildings" in addition to a number of somewhat minor subdivisions.

[4] Festschrift, *Der Schweizerische Bauernverband*, Brugg: 1922, p. 88.

[5] The farm accounting policy of the SFU was being guided by the newly elected (1898) "Sekretär" Dr. Ernst Laur, of the Agricultural School at Brugg, whose "Suggestions for Measures for the Dissemination of Farm Accounting" had appeared three years previously, Heft, 26, *Schweizerische Landwirtschaftliche Zeitschrift*, 1895, p. 9. Laur's suggestions for farm accounting (1895) were as follows:

1. Correct farm accounting in our present day economic situation is an indispensable preliminary for continuous success in the farm business.
2. Farm accounting reaches its fullest importance only when it is arranged according to the "doppelte system" and specializes in the production costs of the individual products.
3. The "doppelte" farm accounting, however, presents such high demands in the ability of the operator that its wide introduction in the near future among our small farmers is absolutely impossible.
4. Most of the farmers will find it necessary to confine themselves to a simpler form of farm accounting. If it should be possible for the activities of state and agricultural associations to obtain a general adoption of the latter it should be looked upon as a valuable achievement.
5. In order to reach this goal we propose:
   (a) A prize shall be offered for the simplest and best introduction to farm accounting.
   (b) This treatise and the blank accounting forms are to be offered to interested farmers at reduced prices or, better yet, gratis.
   (c) The farmers with correct farm accounts shall be rewarded each year.
   (d) The agricultural associations are to be made cognizant of the value of conducting farm accounting courses.
   (e) It is to be determined if and to what extent farm accounting may be incorporated as part of the work of the agricultural schools.
6. The question shall be raised whether the advantages of the "doppelte accounting" can not be made available to larger areas through the founding of research institutions for farm accounting combined with a central office and in how far such an institute were fitted to simplify the simple farm accounting and to give its findings greater exactness and higher value.

Laur was a student and later the successor of Adolph Kraemer, the professor of farm management at the Federal Technical College in Zurich, Switzerland. As early as 1859 Kraemer had written a treatise on farm accounting to be followed by others, particularly those dealing with detailed accounting or "cost accounting."

This program proposed by the Swiss Farmers' Union was as follows:

1. Each year simple farm accounts should be conducted on 30 to 40 farms, the account keepers receiving a compensation for their efforts the first year.
2. At the end of the year the account keepers should be invited to continue the record keeping, and also to deliver their records to the Central Office.
3. The addition of new farms should continue until a sufficient number of farms representing the various types of farming extant in Switzerland were included and their accounting results gathered and utilized.

The Department of Agriculture accepted this program and appropriated 5,000 francs ($1,000) for its support. The first regular course of instruction in farm accounting took place in 1901 with 131 participants. This first course has been followed by from one to three similar courses each year since, with a total attendance of approximately 100 new account-keepers per year, in recent years.

Present Day Conduct of Farm Accounting Investigations

Publicity is given to the approaching course early in January. Farmers interested are requested to write to the central headquarters of the Swiss Farmers' Union in Brugg signifying their interest. A date is set beyond which further applications will not be accepted. The applications are acknowledged upon receipt of same and each applicant advised that the selection will be made at a specified date. At that time each applicant chosen receives a contract blank for his signature.[6]

CONTRACT PLEDGE

[6] The undersigned declares himself ready to participate in the Farm Accounting Course to be held February 19 - - by the Swiss Farmers' Union in accord with the following conditions:

1. The undersigned pledges himself to appear promptly at the opening of the accounting course and to follow the instructions regularly and attentively.
2. The undersigned pledges himself to conduct on his farm for at least one year the accounting procedure as taught him in this course, and at the close of the year to deliver his books to the Sekretariat of the Swiss Farmers' Union for its use.
3. The Sekretariat of the Swiss Farmers' Union is pledged to keep the contents of the account books confidential.
4. As compensation the course participants receive:
   (a) Railway fare III-class round trip, including bus or auto fares.
   (b) Free board and room in Brugg, 2 breakfasts, 3 dinners, 2 suppers, and 2 nights.
   (c) Free instruction, supplies, and farm accounting blank forms.
   (Participants who are required to arrive the previous evening are granted an extra compensation of five francs.)
5. The Sekretariat holds itself ready after delivery of the records to pay the account keeper a sum of money and to furnish him a diploma. This payment is dependent upon the appropriation by the Federal Assembly as of ..... 19..... The Sekretariat can not, under the circumstances, hold itself pledged to pay this indemnity.
6. Participants who do not fulfill the above stipulations are required to repay the costs involved and a tuition fee for the course of instruction.

The above is understood and agreed to by:

.....Name

Place .....

Date .....

As can be observed from the contract blank, a reciprocal responsibility is involved. This has the purpose of stimulating the account keeper to complete his accounting year and also to protect the Sekretariat against losses.

The participants are divided into three groups. In two of these groups the instruction is given in German, in the third, in French, according to the language preference. The courses given in February consist of strenuous instruction during a three-day period in Brugg.[7]

The farmer-participants with their sample record books "kept" during the course return home and put into practice, without further immediate assistance, the instruction received. During the summer, one of the workers from the central office in Brugg visits each beginner to check the entries and to correct visible errors. At the end of the year the farmer sends in his completed books and reports and receives in return new blank forms if he cares to continue.

Records show that up to 1922, 2280 farmers completed the course of instruction given by the central office. From these men 6063 usable farm accounts were received. Each year now adds

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[7] PROGRAM OF FARM ACCOUNTING COURSE.

First Day

10.00	Official welcome by a representative of the Swiss Farmers' Union. Roll call. General introductory remarks and directions.
10.30–11	Beginning of instruction: Introduction of general fundamental considerations.
11.00–12	Beginning Inventory. Land.
12.00–14.00	Dinner. Distribution of Lodgings.
14.00–16.00	Beginning Inventory. Land improvements, buildings, "Plant Capital."
16.00–16.20	Intermission.
16.20–18.15	Beginning Inventory: Livestock, implements, and machinery and circulating Farm Capital.
19.00	Supper.
20.15	Lecture by a representative of the Swiss Farmers' Union. (Note the P.M. hours are reported on the 24-hour clock.)

Second Day

7.00	Breakfast.
8.00–10.00	Beginning Inventory: Liabilities of the farm, inventory of the household, the accessory business and the personal consumption.
10.00–10.20	Intermission.
10.20–12.00	Cash book, complete transactions for one month. Recapitulation for same.
12.00–13.15	Dinner.
13.15–14.00	Visiting the SFU, its branches and arrangements.
14.00–16.00	Household book, reciprocal contributions and labor services.
16.00–16.20	Intermission.
16.20–16.40	Household book; record of extraordinary days board. Recapitulation.
16.40–18.15	Closing Inventory. Land, livestock, equipment and machinery capital.
19.00	Supper.
20.00	Discussion. Open discussion of the subject matter with special reference to the "own" farm. Handling unusual cases, etc.

Third Day

7.00	Breakfast.
8.00–9.15	Closing Inventory. Circulating farm capital, Liabilities of the farm, closing Inventory of the household, accessory business and the personal consumption.
9.15–9.30	Auxiliary Books; Pocket diary note book. Personal current account.
9.30–10.15	Summary reckoning. Change in net worth. Abstract of the cash book and household book.
10.15–10.30	Intermission.
10.30–12.15	Summary reckoning, labor wage claims, household costs, personal consumption, Income, labor earnings, capital return, net return, product value.
12.15	Dinner. Payment of railway fares, etc.
13.15	Closing observations. General directions and instructions.
14.00	Closing remarks by a representative of the SFU.
14.30	Official Close. Participants dismissed.

approximately 500 completed farm accounts.[8] Results show that the average farmer keeps these records in connection with the central office of the Swiss Farmers' Union for approximately three years.[9] After dropping out of this contact, he may continue account-keeping on his own initiative for a time. Little evidence is available to certify that any considerate number of the farmer record keepers continue after this separation from the central office. Officials of the accounting division suggested that when such records were kept, they were generally only cash receipts and disbursements, occasionally an inventory, but rarely any other data, and that practically no summaries were made of these figures.

Blank Forms and Records used in Farm Accounting Investigations in Switzerland

The individual records which form a part of the farm accounting investigations of the Swiss Farmers' Union include a very detailed inventory, a complete record of cash receipts and ex-

[8] Complete Farm Accounts and Surveys***.

Accounts covering the entire farm business			Special or enterprise accounts		
Year	Simple farm accounts	Detailed* or cost accounts	Beekeeping** records	Poultry** records	Viticulture** surveys
1922	411	5	99	—	213
1923	422	5	84	—	187
1924	444	5	89	103	162
1925	477	5	94	71	137
1926	493	5	87	77	168
1927	492	5	87	102	153
1928	511	5	78	70	183
1929	518	5	70	82	161
1930	517	7	72	119	174

*These detailed or cost accounts were begun in 1912.
** These special accounts are of recent origin.
*** Page 93—Bulletin 100—1931 "Die Entwicklung des Schweizerischen Bauernverbandes und des Schweizerischen Bauernsekretariates." 1922–1930

[9] It is estimated that the percentage of those instructed who send in usable books is as below:*

First year	90%	Fourth year	25%
Second year	50%	Fifth year	20%
Third year	33%	Tenth year	11%

* Fritz Zaugg, *Rentabilitätserhebungen*, Brugg: 1923, p. 14.

For 1929-30 there were delivered to the central office at Brugg,**

1st year Records	84	16th year Records	6
2d " "	51	17th " "	9
3d " "	45	18th " "	12
4th " "	40	19th " "	7
5th " "	33	20th " "	5
6th " "	27	21st " "	5
7th " "	26	22d " "	7
8th " "	29	23d " "	8
9th " "	16	24th " "	7
10th " "	20	25th " "	9
11th " "	16	26th " "	9
12th " "	19	27th " "	1
13th " "	17	28th " "	6
14th " "	10	29th " "	2
15th " "	2		

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** Annual report, S.F.U. 1929-30.

penditures, a record of transactions not cash, such as contributions in kind from one to others of the four major divisions recognized in the accounting: farm, household (board), accessory business, and personal consumption. In addition to the above "books," various accessory blanks for supplementary information are used. The closing summary blank forms, which are entirely completed in the office of the Central Organization, are in addition to the records above mentioned.[10]

The inventory forms consist of loose-leaf double sheets which are filled out each year by the farmer, a transcription of the closing inventory of the current year being made on new sheets for the ensuing year. The pattern for the group subdivisions and the sequence of items is given in a 175-page instruction booklet furnished each participant in the course of instructions.[11]

The cash book is likewise built up of loose-leaf double sheets which are later bound into a simple paper cover. The book into which are recorded the non-cash, inter-account transfers, as supplies or services furnished from farm (board), accessory business, or personal consumption, or *vice versa,* consists of a bound booklet of 24 pages. The items are entered here in a given sequence as per the sample furnished. Another booklet called the "Housewife's Notebook for Petty Transactions" is supposed to contain the many minor transactions of the family which later may be summarized, classified, and entered in the larger books in combined entries thus minimizing somewhat the number and details of the entries. At the time of the midsummer inspection of new account keeping farms, certain supplementary information is obtained which deals with the type of farming, its topography, climatic relationships, markets, etc. Other items of supplementary information, including a livestock check and a survey of alcoholic beverages produced and consumed, are collected at the close of the accounting year.

Following the completion of the year's entries by the farmer, he mails his books and supplementary sheets to the central office in Brugg where the summary computations are made. A full year's time of the force of 12 or 13 workers is utilized to compute the summaries and compile the "Statistik" which forms the

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[10] We are here concerned with what the Swiss distinguish as their Simple Farm Accounts. In addition to these simple farm accounts, the Swiss Farmers' Union conducts a few detailed accounts, known to them as "doppelte-accounts" meaning double entry, detailed cost and enterprise earnings accounts. Now five to six farms are so studied each year. Certain enterprise accounts also are being undertaken. (See table in footnote 8.)

[11] Laur, Ernst, *Landwirtschaftliche Buchhaltung für Bauerliche Verhältnisse,* Emil Wirz Aarau; translated into English by Walter J. Roth but not yet published. 9th edition, 1925.

bulk of the annual report of the Swiss Farmers' Union and furnishes the material for the report of the Federal Department of Economics published in the Swiss Yearbook of Agriculture and also as a separate report. Each farmer is furnished with a complete summary report in addition to his original account books. Further, he is paid a small fee for his services, the total reimbursement for 1929-30 being 1530 francs ($306) divided among the first-year men (84). Account keepers continuing for 10 years are presented with a carved wooden bread plate and those of 25 years' standing are given a silver wine pitcher with beakers. During the past year (1929-30) nine record keepers achieved this latter goal.

Annual Expenditures for Farm Accounting Investigations

The expenditures for the Farm Accounting Investigations totaled 84,987.69 francs for the year 1929-30 (approximately $17,000). Of this amount the Swiss Federal Government contributed 40,000 francs, the balance being covered by the Swiss Farmers' Union itself. A small fee (300 francs) is charged the farmers participating in the detailed or cost accounting, but the major burden of the difference falls upon the Union. The interest of the Federal Government (Eidgenossisches Volkswirtschafts-Departement, Federal Department of Economics) is maintained through the importance attached to the annual reports prepared by the Swiss Farmers' Union for the annual yearbook, and in part through the prestige of the Union itself.

The above expenditures were distributed among salaries, travel, courses of inspection and office maintenance, as follows:

	Francs	*Per cent*
Salaries and Wages	58,314.50	68.6
Travel	2,203.15	2.6
Blank forms and reports	9,314.65	11.0
Instruction courses	4,701.60	5.5
Premiums	3,227.30	3.8
Rent, heat, light, phone, postage	5,818.44	6.8
New Equipment and Miscellaneous	1,408.05	1.7
Total	84,987.69	100

Salaries and wages represent the major portion of the budget with the other items falling considerably below this item in amount.

The Simple Farm Accounts

Farm accounts, say the Swiss,[12] serve the following purposes:

1. The investigations permit a verdict covering the profitableness of agriculture and its changes under the influence of natural and economic factors.
2. They make possible the solution of a series of farm management questions.
3. They provide the figures for instruction in agricultural schools.
4. They support the foundations of demands in the field of agricultural legislation and are of great import for national economics.
5. They train the farmer.
6. They make possible for the farm account keeper a dependable appraisal of the farm values and form the foundation for the taking over of farms and the buying out of heirs. They warn the farmer against overpayments.

These purposes are further elaborated throughout the numerous publications of the Union and may be summarized thus: For private economic purposes, that is, farm management, to portray the income of the farm and incidentally the gross return, the expenses, and the net return. In addition the capital organization of the farm, changes in net worth, and the annual product value are to be determined. Further, from the records and accounts should be determinable the land utilization, the cash transactions, the consumption of materials and supplies as well as services and the computation of the "costs" of the contribution by the household to the farm business.

For the socio-economic purposes or as a basis for agricultural policy, similar information on income is desirable not only as an average for all farms but also as an average for special groups of farms such as size variations, variations in geographical regions, types of farming and systems of farming.

Further, the information on the capital organization of agriculture, its changes in net worth and product value, and the utilization of the land area, are of vital interest from a socio-economic standpoint. Other items of information growing out of the account keeping also have value in portraying at different times the status of agriculture in its various phases in a collective sense and in this way the farm accounts are considered as contributing to the national welfare.

Appraising the Farm Accounts

Several questions may be raised relative to the records which form the basis of the above purposes. What of the accuracy of the computations? Is the method of account keeping in line with

[12] Fritz Zaugg, *Rentabilitätserhebungen*, Brugg: 1923, p. 7.

the underlying and fundamental principles of the business? Are the records correctly reported and correctly compiled? Are the many physical quantities the result of measurements or of estimates? Are the appraisals of value approximations of the fact and, if so, to what degree? Again it is desirable to know whether the constituent records are representative of the universe from which drawn, i.e., do they correctly portray the size, and geographical and type distributions extant in Switzerland? Finally, what can we say as to their usefulness in the field of farm management and in the field of public policy? These questions are probably unanswerable in their entirety.

Laur's Income Measures

The computation of the Swiss income figures hinge upon the proper computation of the "gross return" and the "expense," according to Laur. The gross return is not merely the cash receipts of the farm plus the increases in inventory and the value of contributions to the farmer's family. It is a very carefully recorded and as carefully appraised account of the increases in values due to the operations of the farm plant for the time period involved. These cash receipts are carefully separated not only into those which are due to the current year of record but also into those which actually belong to the operations of the farm business and into those which have grown out of the operations of this particular farm. Thus the current year's receipts are carefully separated from receipts covering last year's business; receipts due to accessory business or side lines are not included and receipts due to sales, say of feeding cattle which were originally purchased as thin cattle and then resold, are separated so that the portion due to the farm operation is distinct from the portion which merely covers the original outlay as purchase money. In addition to the carefully segregated cash receipts, the gross return will include the value of contributions in kind from the farm to the family or to others such as laborers or relatives; the value of farm products used for the maintenance of the farm plant and, obviously, the value of such increases in farm inventories as supplies, feed, seed, livestock, growing crops, orchard and forest trees, etc.

Similarly, the expense is not merely a record of cash outlays but, far more, an account of those outlays belonging to the current year, the farm business, and specifically this farm for which accounts are kept. In addition to the cash outlays, goods or serv-

ices received by the farm from outside the farm business, the contributions in kind to laborers, and also the appraised value of the labor time of the farmer and his family are entered as part of the farm expense. The farm expense also includes a nominal charge for the farm operator's management. Goods bought for resale are not included as current expense, but decreases in inventories of supplies, feed, seed, livestock, growing crops, trees, etc., are considered as expense of the farm. Depreciation of farm plant is also included as expense.

The income of the farm family, says Professor Laur, Research Director of the Swiss Farmers' Union, represents "that share of the gross return which, within a given time period, has become the property of the operator and may be consumed by the operator and his family without reducing the family's farm assets during the same period." This represents the farm earnings for the unpaid family labor and the unpaid family capital (interest paid on liabilities having been subtracted).

The income measures used in Switzerland include:

1. Family Farm Earnings, reported as (a) a total money figure and (b) per day of man labor.
2. Family Labor Earnings, per day of man labor.
3. Family Capital Earnings, reported as (a) a total money figure and (b) as per cent of family capital invested.
4. The Net Return (on total farm assets), reported as (a) a total money figure and (b) in per cent of total invested capital.

The first three Laur considers as subjective measures of income and especially suited to small farms but less well suited to "larger" farms. The fourth, Laur considers an objective measure of income and as especially suited to the large farms but less well suited to the small farms because in the small farm he sees an opportunity to utilize productively an available labor resource while the large farm is more an opportunity to utilize an available capital resource.

Sources of Error

The major source of error, which is common to all the measures of income, is the appraisal of the value of the non-cash items which enter into the computation of the income. In the makeup of the gross returns we find a number of indirect or non-cash receipts. The first of these is the increase in inventories. Obviously, over a period of years, this will balance out, but in any particular year the quantities may be unduly large. The

opportunity for error lies not so much in the physical quantities reported as in the values attached to these quantities. There is probably a general tendency to overvalue goods on hand and a tendency to overestimate quality and grade, and to assume market values for supplies which are on the farm. However, this is not a serious source of error unless unusually large quantities be held over or unless unusually high prices should happen to prevail at inventory time.

A more serious source of error, perhaps, is the valuation of goods and services in kind furnished in Laur's accounting to household, accessory business, or personal consumption as non-cash transfers. On the small farms he computes 27 per cent of the gross return as going to "self-sufficiency" and in the largest farms 12 per cent is so directed. These quantities are augmented by additional amounts, in some cases equal or larger, for which no market price can be established because these items are utilized without going directly into market channels. The physical quantities are probably recorded correctly enough but the values placed upon these items are probably higher than would be the case if the prices of these items were the subject of market action. Often these items are non-saleable items; they do not represent an alternative opportunity for the farmer at that price; often, were he actually to pay that price for the goods, he would not and could not use them where he has used them because they would not represent economic opportunities. Having the goods, he uses them because of lack of better alternatives.

Among these items furnished by the farm are items of food for the board of hired workers, services of farm workers, farm power and farm equipment, house rent (shelter) furnished to workers and operator, supplies furnished to accessory business, etc.

This overvaluation of items produced and taken from the farm is offset in part at least by the non-cash items of farm expense. First among these is depreciation. The charge for depreciation depends upon an estimate of the number of years of effective life or service in the asset and an appraisal of the value of the asset if it is not a matter of recent purchase. There is probably a tendency to overestimate the length of life of physical assets and to allow too little for obsolescence. On the other hand, there is also probably a tendency to overvalue assets in appraisals. While the first will tend to reduce the charge for de-

preciation, the second will tend to increase it. To some extent these will thus offset each other. Probably no very great error arises here due to the rather satisfactory technical knowledge available in the matter of both years of life and value appraisal of assets in Laur's organization.

The category of farm expense items which includes contributions of household, accessory business and personal consumption to the farm is not a large one ordinarily in the case of family farm earnings where unpaid family labor and unpaid capital are not evaluated and the imputed charge subtracted. There is one item which is of some consequence, however, and which may represent a charge of some moment on farms where large numbers of hired laborers are used: this is the computation of the charge for board. This is made up of cash and non-cash items, house rent, use of furniture, labor, non-cash farm supplies, fuel, etc. Insofar as these items are subject to overvaluation, then the board charge per day is also subject to overvaluation. The record of the number of days to be charged is probably less subject to error.

In the allocation of family farm earnings to labor and capital, Laur assumes a charge as imputed return for the "own" or family capital invested. This subtracted from the family farm earnings leaves the family labor as a residual claimant. In the imputed capital return are involved an appraisal of the value of the capital and an interest rate. The tendency to overvalue the capital exists here also, especially on the smaller farms. Especially is there a tendency to assume a rate of interest which is too high. The interest return taken at 4 per cent or 5 per cent or 6 per cent is higher than farmers earn either in farming or in the investments which they make outside. It is futile to say farmers can gain bank rates. Some few do, it is true. We have insufficient evidence to show that farmers do gain bank rates when investing spare funds; in fact, many instances are known, while scores are probably unknown, where principal and interest are both lost in an attempt to gain high rates. The tendency when either appraisal or rate or both are too high, is to reduce the residual labor income. This is further reduced when measured by the unit of the day's work. Given a farm which uses many days of labor because available, even though at low productivity, the tendency of a large number of days so used is to lower the rate earned per day.

Similarly, the allocation of family farm earnings to family

capital as a residual claimant will give to the overvalued capital a computed rate earned which is low due to the overvaluation of the capital and to the overvaluation of the imputed labor wage claim which has been deducted. The assumption that days supplied have a value equal to days which are hired is not valid. If they were subject to hiring they often would not be hired, particularly at that rate.

The general tendency, then, is to achieve a figure which is too low, giving the income an undervaluation, whether computed for labor or for capital.

The computation of the net return, Laur's favorite index for the larger farm, is subject to the same limitations as were pointed out for the other measures where gross return and expense were involved. In the computation of net return we find the inclusion of an item for the unpaid family labor. No item of interest, paid or unpaid, is included since the net return is measured as the return on total assets, hence its objective character.

This included estimate of a charge for unpaid labor is, as above stated, subject to overvaluation, thus making the net return smaller than would otherwise be the case. A second element which will tend to cause the net return to appear smaller still is the possibility of overvaluation of assets. When the smaller total monetary net return, absolutely, is divided by the larger figure for assets, the rate falls proportionately. The general effect is to reduce the income rate below what it probably should be.

From the foregoing it would seem that the total figure for family farm earnings might be lower than it should be, but more so is this true of the residual claimant, whether labor or capital, when an attempt is made to allocate the above composite return. Similarly, the net return on total assets may be lower than need be, due to the subtraction of overvalued items, especially the imputed charge for unpaid labor.

Under the head of representativeness of sample we may ask, Do the farms for which Laur's organization keeps accounts represent Swiss agriculture? Does his sample typify the universe which he is studying?

An inspection of the size of farm distribution for all farms in Switzerland and for Laur's account-keeping farmers will assist in picturing this situation.

The Swiss census for 1905 is the latest available and compares with the account-keeping sample thus:

	*1905 Swiss census hectares**	*1929-30 S.F.U. Acct. Farms hectares**
Average size of farm, with forest	8.57	15.19
Average size of farm, without forest	4.92	12.66

* The hectare is equal to 2.47 acres.

Thus we see that Laur's account-keeping farms are considerably larger than the average of all Swiss farms. Especially is this noticeable in the area without forest, the account-keeping farms being more than two and one-half times the average size of all farms of the same category.

A further inspection of the distribution of Swiss farms into

TABLE 1.—FREQUENCY DISTRIBUTION OF SWISS FARMS BY SIZE GROUPS AS SHOWN BY SWISS CENSUS FOR 1905 AND SWISS FARMERS' UNION FOR 1928

1905 Swiss Census Size Groups (hectares, or 2.47 acres)	Swiss Farmers Union 1928 Size Groups (hectares, or 2.47 acres)	1905 Swiss Census		Swiss Farmers' Union Account-keeping Farms 1928	
		Number	Per cent	Number	Per cent
0.5– 3.0	Under– 5	100,390	41	36	7.18
3.1–10.0	5.0–10.0	101,529	42	179	35.73
10.1–15.0	10.0–15.0	19,263	8	115	22.96
15.1–30.0	15.0–30.0	14,744	6	135	26.95
30.1–70.0	30.0–	4,620	2	36	7.18
70.1–		2,664	1		
	Totals	243,710	100	501	100

the various size groups will depict this situation still more clearly.

Thus the first two groups of Laur's smallest farms coincide with the first two of the Federal census. Here but 43 per cent of his farms are in the same size groups as 83 per cent of all farms. Obviously, he does not include many of the smaller farms. This is more clearly seen when it is noted that only 7.18 per cent of his farms correspond to a group which comprises upwards of possibly 60 per cent of all Swiss farms (estimated at 60 per cent for farms under 5 hectares). Or stated differently, 57 per cent of his farms are drawn from a group which represents but 17 per cent of all Swiss farms. Clearly his account keeping portrays larger farms than the average of his universe.

Since 7 per cent of his farms represent 3% of all farms = 30.0 Ha and over.
Since 27 per cent of his farms represent 6% of all farms = 15.1—30.0 Ha.
Since 23 per cent of his farms represent 8% of all farms = 10.1—15.0 Ha.

Since 43 per cent of his farms represent 83% of all farms = under 10.1 Ha.
We may say he has
2 x the largest size group, i.e., over 30 hectares
4 x the next largest size group, i.e., 15—30 hectares
3 x the next largest size group, i.e., 10—15 hectares
½ x the next largest size group, i.e., the smallest or under 10.1 Ha.

If we again divide this size group and note that he has but 7 per cent of his farms in the group under 5 hectares and that this group constitutes 60 per cent of all farms, then he really represents only approximately one-eighth of the small farms of Switzerland in his sample.

The average family farm earnings of Swiss farms is given as 5,375 francs, ($1,075) in 1928.[13] This, however, appears thus in the various size groups:

Hectares	*Francs*	*Dollars*
0– 5	3,530	706
5–10	4,474	895
10–15	5,440	1,068
15–30	6,291	1,258
30	9,294	1,859
Average	5,375	1,075

The median group has approximately the average earnings but since only 17 per cent[13] of all farms in Switzerland were in this group and the two next higher classes, this average income can hardly be said to represent more than possibly one-third of all Swiss farms; two-thirds are definitely recipients of lower incomes.

Laur's distribution is distinctly different from the actual distribution of the universe. This tends to give the larger farm undue emphasis in the computation of the average. This tends to overvalue total income, it overvalues net return on capital, and will influence the return per hectare in the direction of the returns on the larger farms.

A glance at the distribution of farms cooperating in the farm income studies in Switzerland (see map, page 69, *Report of* SFU, 1929-30) portrays clearly the fact that geographically considered, the sample of farms now being studied is largely concentrated in the farms of northern Switzerland. The farms of central and southern Switzerland are less well represented. Unfortunately, figures are not available which will make possible a comparison of numbers of account-keeping farms in various cantons with the total farm numbers for the same areas. We have confirmation of this dearth of farms in the central areas

[13] Figures for 1928 were used in part due to lack of complete data for 1929-30.

in official statements. (33d Annual Report, page 133, Bulletin 100, 1931.) Due to the method of selecting cooperators, it is difficult to avoid this concentration in certain areas with consequent scarcity of numbers in others.

The effect of unequal price level changes due to the preponderance of certain products on some farms over others must be taken into account in dealing with averages for all farms. When milk prices fall, due to excessive production relative to market opportunities, and grain prices are either actually or relatively advanced, then the dairy farms will show "lowered" incomes, the grain farms "raised" incomes. The average of all farms will move up or down, depending upon the number of each type included in the average. Obviously, a segregation of farms is necessary in order to portray more accurately what has happened.

Given a certain percentage increase in the average income of Swiss farms or for any particular group, it does not necessarily follow that Swiss agriculture is absolutely better off by that same ratio, for the general price level may also have shifted and more or less than the ratio of increase as shown by the income change. Doubling the farmer's income will not double the farmer's purchasing power if at the same time his price level for purchases has moved up a like amount. The changes in incomes reported for Swiss farms do not have an adjusting price level index to correct the absolute changes into relative changes when such changes are necessary.

Apropos the usefulness of these farm account records for the private economy of the individual farm manager, a question which most naturally is raised is: Why do most of these Swiss farmers, after being trained in farm record-keeping, after having overcome the first difficulties, and after having received the reports returned to them by the Central Office of the Union, fail to appreciate these records sufficiently to continue?

It cannot be said that these Swiss farmers are unaware of record-keeping, that they cannot perform the details of the process, nor can it be that they are ignorant of the benefits of such records as information. Their connection with the course of instruction and the returned reports should have opened this door to them.

We can only judge in the case of the majority of these farmers who have been instructed and who have kept such records, that for some reason their further effort is greater than their estimate of the gain which they receive. To them the further effort

"does not pay." It is, to them, an uneconomical use of their energy and time.

From the point of view of organization and operation of the farm, can it be possible that these Swiss farmers have gained in three years' contact with the farm record-keeping enough of a background of analysis so that for the future they can, intuitively, determine the weak points of their businesses? Can it be that the business is, after all, so simple that no longer time is required to learn its intricacies, its strong points, and its weaknesses?

It may be, and it is more likely that these Swiss farmers, even after having been instructed and after having been furnished with summary computations for three years, still fail to appreciate the utility of such data for business control, for income measurement, and for planning ahead. Or, it may be possible that the records and summary contain too much material which is only dimly related in the farmer's mind to the reality which he faces and for this reason he finds it impossible to use this information.

Another reason why these Swiss farmers have not gone farther in keeping farm accounts may be due to a lack of understanding as to how to use the farm accounting information. The emphasis has been placed upon a financial record, summarized by a central office with a financial summary returned to the farmer. This he may understand; and again he may not. It is more likely that, receiving this summary during the summer of the year following its final entries (February) he can give it only scant attention then and it is laid away and forgotten. Again, the Swiss Agricultural Organization carries within itself no extension activities, as we know them, to call this material into life and attempt to make it dynamic. No program exists for teaching the farmer how to plan ahead in "budget" or "advance estimate" fashion. Some attempts at "farm advising" are now under way. The publication of a bulletin covering measures on farm advising in Germany and the consideration of this subject in the recent conference of the agricultural teachers indicate the trend of present day thinking along these lines.[14]

It is also difficult to conceive the turn which advance estimate planning will take, if attempted, due to the emphasis of Pro-

[14] *Neuzeitliche Bestrebungen zur Förderung der Landwirtschaft*, Bulletin 91, SFU Brugg, 1928; *Farm Advising and the Use of Farm Accounting Data*, Association of Teachers in Agricultural Schools, Zürich, June, 1929.

fessor Laur on the use of detailed value (or cost) farm accounting data for the analysis and synthesis of the farm program. Since he himself admits that the ordinary farm cannot hope to maintain detailed accounts, and since the detailed accounts kept by his research office are on such unrepresentative farms,[15] it is doubtful if this can be a fruitful source of assistance.

Of the six purposes for keeping accounts[16] only one (Number 2) interests the farmer directly in the current operation of his business. The farmer has farm management questions which he wishes answered. These recur annually and oftener. If the results of his farm accounting can furnish him with information leading to a solution of these questions, he will be induced to continue the effort of such accounting. If the farm accounting does not furnish him such information for his personal problems he will not find in the state and national problems enough incentive for his effort.

Swiss farmers are not essentially different from farmers elsewhere. Their lack of interest in the farm accounting which is known to them is due to the limited information it can furnish them for their specific farm management questions. The reports they make involve financial records primarily. The summaries they receive are too largely financial. These are so much a one-sided part of the information needed by a farmer for answering the questions on organization and operation that he can make no effective use of them. Failing to learn much more than his financial returns on capital, the product value of his farm, the cost of board per day and similar information, he must lose interest. This information gives him no data for an answer as to how he can improve his productive organization, or even his current operation. The financial information, dependent as it is upon current prices to a large extent, and coming to him from six to eight months after he has completed the operation of the year in question and started on another year, is so much of the past that he has lost contact and interest. This realization apparently comes to the average farmer in approximately three years. This is the case in Switzerland. The additional recruits added to the ranks each year are drawn through the incentive

[15] The detailed cost and enterprise earning accounts or cost accounts are now being conducted on (1) Pestalozziheim, a school for boys, (2) the experimental farm of the agricultural school at Brugg, (3) the Cantonal Estate Thurgau, a State penal institution and hospital, (4) a sanitarium belonging to a wealthy physician and operated in connection with his private asylum, and (5) one private farm, the owner-operator of which may be styled a farm management eccentric and whose father kept detailed labor and other records since 1880, but who never made a "summary" until his association with the Swiss Farmers' Union in 1912.

[16] See page 561.

of a trip to Brugg, the reimbursement of the expenses incident thereto and the lure of the fee payment at the year's end. These Swiss farmers accept this opportunity to break the routine of their ordered lives.

This situation does not reflect upon the accuracy of the records kept by the SFU nor upon their validity for other purposes.[17] It merely questions the use which farmers can make of records kept in such manner and which include no more information than the financial results. The farmer must see within the effort recommended to him a definite, utilitarian end. He rightly judges every act by the acid test, "Will it pay?" If a farm accounting does not give in return more than it costs in time and energy and money, the farmer will discard it. If he cannot find the means of making it pay he should discard it.

For purposes of public policy for the socio-economic utilization of the results of the record keeping, one needs but to point out the lack of representativeness, the possible errors in valuation, and the effect of these two influences upon any average figures determined for a given year. In addition to this must be taken into account the effect upon the income figures of changes in time bringing with them variations in demand for goods, variations in the price level, changes in production technique and production costs, variations in the internal structure of the farm, and variations in the effects upon agriculture in different geographical regions.

Were the results of any year and all years to portray correctly the status of agriculture for that year, the question naturally arises whether absolute change between years correctly measures and portrays the relative change between years and between regions, sizes and types of farming. Insofar as the sample is skewed and therefore unrepresentative of the universe, insofar will it fail to portray the changes occurring. It will thus portray more nearly the changes taking place in the elements of the universe which are in preponderance in the sample.

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[17] Agricultural situation in socio-economic sense (Returns to Agriculture)
Agricultural Policy
Agricultural Legislation
Agricultural Schools
General Training of Farmer

AGRICULTURAL CREDIT CORPORATIONS AND THEIR PROBLEMS

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The Agricultural Credits Act of 1923 resulted in two new types of financial institutions to serve farmers: first, the Federal intermediate credit banks, which were chartered under the Act; and second, agricultural credit corporations, institutions which were not created under the Act but which have developed as a result of having the privilege of rediscounting paper with the above banks.

The Act created twelve Federal intermediate credit banks. The Federal government subscribed to $5,000,000 capital of each of these banks. Up to the present time only two of them have called the full amount. The principal sources of funds for these banks, however, is not the Federal government but the investment market in which their debentures are sold. The banks furnish two types of credit: first, marketing credit to farmers' cooperative associations on paper secured by warehouse receipts; and second, production or general agricultural credit to individual farmers by rediscounting their notes for various financial institutions, principally agricultural credit corporations, livestock loan companies, and state and national banks.

Agricultural credit corporations and livestock loan companies (often identical in every respect, for many organizations specializing in livestock loans are called agricultural credit corporations) are organized generally under the corporation laws of the states in which they operate, although some few states have provided special statutes for them. These organizations, serving as connecting links between the Federal intermediate credit banks and the farmers, are in a sense similar to the national farm loan associations. They differ, however, in that they are not organized under the Federal law creating the banks and are more truly independent institutions.

History

During the early years of the Federal Intermediate Credit System the growth of agricultural credit corporations was very rapid. The years 1923, 1924, and 1925 saw the development of these organizations for various purposes, including the taking

over of frozen loans of banks, the supplementing of bank facilities, and the aiding of cooperative marketing associations. But the growth of the movement was too rapid to be healthy. Springing into popular favor as they did, the volume of business of the agricultural credit corporations increased more rapidly than experience was obtained. The inevitable result was mistakes of management, which in many cases wrecked the organizations. A part of the blame may be attributed to the fact that the depression of agriculture lasted longer than most persons expected. Conditions, instead of improving, went from bad to worse

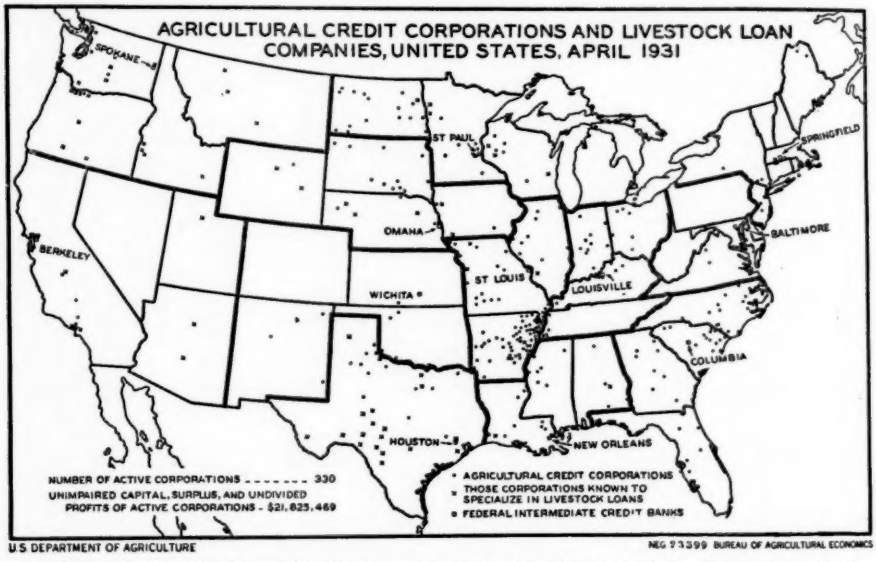

Figure 1.—Agricultural Credit Corporations and Livestock Loan Companies in the United States, April, 1931.

throughout a decade. Affiliation of agricultural credit corporations with banks often resulted in the corporations obtaining not only the frozen paper held by the banks but also in many cases their poorest paper. Agricultural credit corporations affiliated with cooperative marketing associations often accumulated a large amount of poor paper in an effort to build up the membership of the marketing association. As a consequence, many of the corporations which were organized in the early years of the system are not existing today. Some few have discontinued operations voluntarily because they were no longer needed or did not fulfill the expectations of the incorporators, but most of them have literally failed.

The following figures indicate in a measure the development and liquidation of rediscounting institutions during the first six years:[1]

Number of Institutions Rediscounting with the Banks Prior to December 31, 1928

State Banks	150
Savings Banks	1
National Banks	12
Trust Companies	8
Agricultural Credit Corporations	378
Livestock Loan Companies	90
Others	3
Total	642

Conditions of these Organizations December 31, 1928

Active	235
Inactive	90
Ceased Discounting	85
Liquidated	231
Total	641

Following this retrenchment there was a lull for several years in the organization of corporations, but the growth within the last year has again been very rapid. The number of agricultural credit corporations and livestock loan companies increased from approximately 245, in the summer of 1930, to approximately 330 in April, 1931. The accompanying map shows the location of the agricultural credit corporations and livestock loan companies in the country as of April, 1931. A study of the discounts closed each year by the Federal intermediate credit banks indicates that the growth of the discount business was broken only in 1928. (See table 1).

Types of Financing

The report of the Federal Farm Loan Board for 1930 gives a clue to the type of loans made by these various institutions by classifying the purposes for which the original discounts of the Federal intermediate credit banks were made (table 2). That classification serves also for agricultural credit corporations and livestock loan companies because only a small portion of the banks' discounts are made for institutions other than these two. (On December 31, 1930, less than 4 per cent of the outstanding discounts were for institutions other than agricultural credit

[1] Report of Federal Farm Loan Board for 1928.

TABLE 1.—DISCOUNTS AND DIRECT LOANS CLOSED BY THE FEDERAL INTERMEDIATE CREDIT BANKS EACH YEAR FROM THE DATE OF ORGANIZATION[1, 2]

Year	Discounts	Direct Loans
1923	$ 9,410,972	$ 34,697,347
1924	33,351,161	57,077,727
1925	53,458,931	124,174,009
1926	73,505,170	102,941,340
1927	87,242,385	54,991,394
1928	83,568,362	53,571,351
1929	94,667,407	43,618,719
1930	109,047,069	109,927,064
Total	$544,251,457	$580,998,951

[1] Includes renewals.
[2] Data were obtained from the annual reports of the Federal Farm Loan Board.

corporations and livestock companies.) Of the new paper handled by the banks in 1930, 56 per cent consisted of livestock paper, most of which was for beef cattle. Loans on sheep and goats also represented a material part of the total. The dairy cattle industry used this source of credit only to a small extent. Next to livestock production, crop production required the largest amount of credit. Thirty-seven per cent of the original advances for the year were made for the production of crops. Various types of crops are financed, among them being cotton, rice, sugar, tobacco, potatoes, strawberries, citrus fruits, apples, wheat, and corn.

Problems of Agricultural Credit Corporations Common to Other Agencies Financing Farmers

The most difficult problems of agricultural credit corporations, like those of many country banks, have grown out of the low prices of agricultural commodities and the low yields due to

TABLE 2.—DISCOUNTS OF THE FEDERAL INTERMEDIATE CREDIT BANKS FOR 1930, CLASSIFIED ACCORDING TO THE PURPOSE FOR WHICH THE CREDIT WAS USED[1]

Purpose	Original Discounts		Discount outstanding, December 31, 1930	
	Dollars	*Per cent*	*Dollars*	*Per cent*
Livestock production,				
Dairy cattle	$ 3,021,174.00	4	$ 2,714,196.73	4
Other cattle	24,777,260.25	36	28,194,864.84	43
Sheep and goats	11,017,195.05	16	15,014,441.84	23
Other livestock	213,258.91	0.3	334,125.35	0.5
Crop production	25,722,802.45	37	9,193,191.30	14
General agricultural purposes	5,037,777.58	7	10,182,381.40	16
Total	$69,789,468.24		$65,633,201.46	

[1] Data were obtained from the annual report for 1930 of the Federal Farm Loan Board. Renewals of approximately $39,000,000 were not classified.

drought. Many agricultural credit corporations have failed within recent years, as well as many banks. Financing institutions reflect the condition of the industry which they serve and only the stronger ones can withstand successfully a serious depression of that industry. The present condition of agriculture is undoubtedly the most serious problem which agricultural credit corporations have to face, but since that problem is not characteristic of agricultural credit corporations alone, it will not be discussed further in this paper.

One of the most difficult problems of agricultural credit corporations as well as of other farm credit agencies has been the excessive hazards of farm loans. Climatic conditions, insect infestations, and sharp fluctuations in the prices of farm products introduce a large element of chance in the farmer's ability to repay loans. Many of the hazards of lending would be eliminated if the borrower had a substantial reserve of accumulated wealth in some form or another. A loan, which is less in amount than the borrower's net worth, is entirely different from a loan which is in excess of it. The former type of loan represents the converting of the borrower's assets into a form suitable for his use, whereas the latter type represents participation in a joint project for the future creation of wealth.

Another problem of agricultural credit corporations, which is shared by most organizations making personal and collateral loans to farmers, is the small size of loans required. A study made of agricultural credit corporations financing the production of cotton in the South indicates the median size loan to be approximately $500. The income per loan on this type of business is small, yet the cost of making and servicing such loans is often as much as the cost would be for a large one.

Still another problem of the agricultural credit corporations, not peculiar to them alone, is that of the seasonal character of farm loans. This is particularly true of loans to produce crops. Loans of this type are outstanding only a fractional part of the year and consequently, the income of the corporation from interest represents only a fraction of what it would be were the loans outstanding for the full year. Moreover, most farmers want credit during the same months so that the financing institution is operating at full capacity only a portion of the year. Data regarding loans to cotton farmers indicate that the average earning period of such loans is between six and seven months.

Problems of Organization

The unfortunate experience of many agricultural credit corporations may be traced to unsound organization. They have been organized very often when there was no real need for them. Farmers who were not able to obtain loans from existing institutions because their credit was of low standing have often sponsored or lent their support to the formation of such organizations in the hope of getting loans. Various organizations have created agricultural credit corporations as affiliates without a close examination of the need for a financing institution. In many of those cases the need of the parent corporation has been a more important consideration than the needs of the farmers within the area. Furthermore, the unsound organization of agricultural credit corporations has in many cases been the result of too hurried an organization. The managements have often been inexperienced and too optimistic. It is very probable that this situation exists to some degree during the present expansion in this type of financing.

Another problem which has confronted agricultural credit corporations has been that of the proper size of organization. Under the rules of the Federal Farm Loan Board, agricultural credit corporations must have at least $10,000 of paid-in and unimpaired capital in order to obtain the rediscount privilege with the Federal intermediate credit banks. Table 3 shows the size of agricultural credit corporations in ten districts for which data are available, but since there are few corporations in the two districts not included, the data from the ten districts are quite representative of the country as a whole. Practically one-third of all corporations have been organized with $10,000 of capital and one-half of them with $15,000 or less.

Corporations organized with only $10,000 of capital are subject to the hazard of losing their rediscount privilege from a slight impairment of capital. A few uncollectable loans may reduce the capital to a figure less than $10,000, thus cutting off the corporation's rediscount privilege and putting it on a liquidating basis. The importance of this problem is realized when one considers that one-third of the corporations are organized with the minimum capital possible.

Corporations with small capital are severely handicapped also as to their volume of business and consequently as to profits. The maximum rediscounts permitted by law on a capital of $10,000 is $100,000. As a matter of fact, this maximum is seldom,

if ever, reached; $60,000 to $70,000 of business being more common. The maximum possible interest earnings for the corporation from $70,000 of rediscounted loans would be $2,100. This amount is entirely too small to pay the necessary expenses and to provide adequate management on a full-time basis.

Closely allied to the question of size is that of the area of operations. Many of the corporations at present are serving only a single county or the local retail trade area of the town or city where they are located. Other corporations are serving numerous counties, some whole states, and some corporations are serving farmers in a number of states. There is probably no ideal area of

TABLE 3.—PAID-IN CAPITAL OF ACTIVE AGRICULTURAL CREDIT CORPORATIONS AND LIVESTOCK LOAN COMPANIES IN TEN FEDERAL INTERMEDIATE CREDIT BANK DISTRICTS[1]

Amount of paid-in capital	Number of Corporations	Percentage of all Corporations	Cumulative percentage of all corporations
Dollars		*Per cent*	*Per cent*
10,000	102	32.80	32.80
10,001– 15,000	52	16.72	49.52
15,001– 20,000	23	7.40	56.92
20,001– 25,000	31	9.97	66.89
25,001– 35,000	14	4.50	71.39
35,001– 50,000	33	10.61	82.00
50,001– 75,000	8	2.57	84.57
75,001–100,000	16	5.15	89.72
100,001–150,000	7	2.25	91.97
150,001–200,000	9	2.89	94.86
200,001–500,000	12	3.86	98.72
500,001–999,999	1	.32	99.04
1,000,000 and over	3	.96	100.00
Total	311		

[1] Data for the Springfield and Baltimore districts are not available.

operations. The size will to a certain extent be determined by the character of the farming industry served. In a dairy or a crop region, a corporation may perhaps operate satisfactorily within a small area surrounding a town. In the livestock industry, it is often necessary for a corporation to operate over a large portion of the state. However, those corporations working in conjunction with cooperative marketing associations usually operate over the same area as the associations.

There are certain advantages and disadvantages both to operating over a wide area and to operating locally. Those corporations which operate over a wide area have a degree of diversification of risks, due to climatic causes, which is not attainable by a local organization. Moreover, the organization which operates over a wide area has often the possibility of obtaining a much larger volume of business and thus being able to pay for better

management. On the other hand, a local organization is in a much better position to pick good loans and to supervise them properly. Its officers are better acquainted with the personal characteristics of the borrowers, have a better knowledge of the security offered for the loan, and are able to keep more closely in touch with the progress of operations and the condition of the security. Moreover, the costs of operating over a restricted area are less than those of operating over a wide area.

A development which appears to have much promise is the use of state-wide agricultural credit corporations operating through local unincorporated groups. These local groups of borrowers pass upon the applications for loans and partially guarantee their payment. In such cases, all borrowers are required to own some stock in the state corporation and all members of the group are required to pledge their stock jointly for each and every loan made by the corporation through the group. This joint endorsement strengthens the loans materially and yet it is not a serious burden on the borrower, for the amount of stock which he is required to own and pledge jointly is probably equal only to about one-tenth of the amount which he borrows. In addition to strengthening the loans, this plan gives the corporation the local contacts which are so valuable, and all the advantages of state-wide operation.

Problems of Rediscounting with the Federal Intermediate Credit Banks

Under the Act which set up the Federal intermediate credit banks, paper which could be rediscounted had a lower limit of six-months duration and an upper limit of three years. In 1930 the lower limit of six months was removed because of the inconvenience involved in crop production loans which are often needed for a shorter period. Few, if any, loans are made in excess of one year. Livestock loans are made for that period and renewed at the end of the year if the security justifies renewal.

Moreover, under the law, the Federal intermediate credit banks are not permitted to rediscount paper for agricultural credit corporations in amounts exceeding ten times their unimpaired capital and surplus. During the early years of the system, lines of credit equal to ten times the capital were often granted. It was soon discovered, however, that a ratio of ten to one was too high, particularly for the financing of crops. Reductions in lines of credit followed. At the present time the ratio

of rediscounts to capital granted by the banks probably averages about six or seven to one. Ratios granted individual corporations depend to a large extent on the character of the paper submitted, the quality of the management of the corporation, and the degree of the conservatism practiced by the particular bank. Ratios as low as three to one are found in crop financing corporations, although five or six to one is more common. Ratios of ten to one are found in a few livestock corporations, although ratios of seven or eight to one are more common.

At the present time, it is the customary practice of the Federal intermediate credit banks to require that all or a portion of the capital of rediscounting companies be invested in securities (either United States bonds, Federal land bank bonds, Federal intermediate credit bank debentures, or other acceptable bonds) and pledged with the bank as additional collateral. In this way the bank is assured that the capital of the corporation, on which it relies as a margin to protect its discounts, is not dissipated. The policy of the banks regarding the use of this additional collateral is varied. In the case of loans which cannot be collected at maturity, some of the banks have continued to hold the matured paper or have it renewed and to carry it on through the next season. Other banks have sold the additional collateral pledged with them in order to retire such frozen loans. In the latter event, the capital of the corporation is used for carryover loans and is unavailable for the purchase of additional collateral necessary as a basis for obtaining the rediscount privilege for the following season. The question resolves itself into one of whether the banks or the corporations should finance the carryover loans. This question is of real importance especially in a year following one such as the drought year of 1930. How much responsibility should the Federal intermediate credit banks take for the financing of farmers in their area? Should they be independent and refuse to finance anything but new "clean" paper every year, or should they take the responsibility of financing the carryover? In a measure this will depend on whether the one per cent margin of earnings allowed them is sufficient to permit them to do so. It must be remembered also that many carryover loans become losses, and if the bank finances the carryover loans while the corporation is permitted to make new loans, the chances of loss for the bank are much greater.

The frequent inability of agricultural credit corporations to take up their paper at maturity has made it necessary for the

intermediate credit banks to examine each piece of paper with great care. With rediscounts equal to six, seven, or eight times the capital, a relatively small loss could absorb all of the corporation's capital and leave the bank with no margin to protect it from loss. In fact, the banks have already suffered large losses on some corporations.

The Federal intermediate credit banks are permitted to charge the agricultural credit corporations and livestock loan companies a rate of interest one per cent in excess of the rate which they pay on their most recent issue of debentures. This margin of earnings is small for the class of business and in many cases is less than the cost of making and servicing the loans. However, the banks are permitted a one per cent spread also on commodity loans to farmers' cooperative marketing associations. On commodity loans the costs are smaller per dollar of loan and the risks are not so great. The one per cent margin of earnings on commodity paper is probably more than is necessary for profitable operation. Thus, it appears that the earnings from commodity loans are used to help pay the cost of the rediscounts.

Problems of Operation

"Red tape," inconvenience, and delay have been several of the most outstanding handicaps to the extension of the business of agricultural credit corporations. These arise for the most part, out of the lack of personal contact between the intermediate credit banks and the farmer borrowers. The bank must depend largely upon records of the corporations and consequently demands a record of all information bearing on the loan. Being unfamiliar with the personal characteristics of the borrower, it must require strict observance of every detail in the legal technicalities of protecting the loan. If the corporation is not a local one the borrower is often required to prepare, without assistance, numerous papers with which he is entirely unfamiliar, such as applications, financial statements, notes, mortgages, assignments, etc. If he makes an error, these must be sent back for correction. Considerable delay results from the necessity of sending all papers through the mails so that a period of two or three weeks commonly elapses between the making of the application and the receipt of the funds. Contrast this situation with that of the farmer who goes to his local bank, signs a note and mortgage, all of the details of which are prepared by the banker, and leaves the bank with the money to his account, subject to his

check. Other conditions being the same, the farmer would naturally prefer to borrow from the local bank rather than from the agricultural credit corporation.

Poor management has been one of the greatest handicaps of agricultural credit corporations in the past. One of the factors contributing to it has been the ease with which individuals could get into the business since credit corporations may be organized and operated with as little as $10,000 capital. Moreover, through the method of selling stock to borrowers, individuals with no investment of their own have been able to build up such corporations. The very fact that the management itself has little if any investment in the corporation is a factor of weakness. The manager in such cases will stay with the organization while it is operating successfully, but as soon as the corporation meets with trouble he leaves for some other field. This situation differs greatly from that of an organization in which the manager's fortune is invested and to which he will stick through adversity in order to save what he can of it. Another factor often contributing to the unsatisfactory management of agricultural credit corporations has been the control by parent organizations. Banks, cooperative marketing associations, and others which have organized agricultural credit corporations to serve their needs have determined the policy of the corporation so that the parent organization rather than the credit corporation, would succeed. Inexperienced and incompetent management has also often been due to a lack of income with which to pay competent men.

The income of agricultural credit corporations is limited. When the intermediate credit banks were first organized, they were permitted to rediscount paper only if the rate charged on the paper did not exceed by more than 1½ per cent the rate which they themselves charged the corporation. Since that time, it has become apparent that a 1½ per cent margin of earnings is too small to cover the costs of operation and losses on loans, and entirely insufficient to yield a return on the investment. Consequently, in January, 1924, the spread allowed on livestock paper was increased to 2 per cent. In January, 1925, it was increased again to 2½ per cent. In January, 1927, the spread on general agricultural paper was increased from 1½ per cent to 2 per cent. Finally, in April, 1931, a spread of 3 per cent on all types of paper was approved by the Federal Farm Loan Board.

A study made of four large agricultural credit corporations

making loans for the production of cotton indicated that 53 per cent of the income was used to pay interest on money borrowed; 46 per cent was used to pay operating expenses; and 1 per cent only was left for operating profits. This 1 per cent was insufficient to meet the losses on loans and entirely inadequate to pay any return on the capital invested. Compare this with the experience of member banks in the Federal Reserve System in 1929. Their interest costs absorbed 33 per cent of the total income, net operating expenses 35 per cent, leaving 32 per cent of the gross income for net operating profit. A study of the same four corporations indicated an income per loan of $48, interest costs of $26, and operating expenses $22, leaving less than $1.00 per loan for operating profit. On a per dollar basis, the income per loan was 5.01 cents; interest costs were 2.66 cents; and operating expenses were 2.34 cents. Practically nothing remained for operating profit.

These figures, it should be remembered, were from corporations engaged in financing crops. The seasonal character of loans made to finance crop operations tends to limit severely the income from such loans. The results have been much more satisfactory in those corporations devoted to the financing of livestock. Many of them at present, it is true, are having serious difficulties with impaired capital, but the impairment is due to losses on loans resulting from depressed prices, rather than from lack of income to carry on operations. The livestock loan companies, with a spread of 2½ per cent until 1930, and a more or less constant volume of loans throughout the year, have found in some cases that it was possible to make substantial profits. Some companies have paid dividends every year on the capital invested.

Will the new spread of 3 per cent be sufficient? The ability of many livestock loan companies to make a profit on a spread of 2½ per cent would indicate that, unless there are excessive losses due to a further decrease in prices, the 3 per cent spread should, in general, be sufficient to provide a generous profit for the owners. In fact, the Federal Intermediate Credit Bank of Houston, Texas, will permit the spread of 3 per cent only if one-half of one per cent is placed in a reserve for losses. On the other hand, it is probable that the 3 per cent margin of earnings will not be sufficient in many cases to finance crops (particularly cotton), to cover losses, and to pay a return on the investment. It is probable that in the crop areas, at least, the increases in rates

will not drive business away from the corporations, because financing costs through other agencies are usually in excess of what the rates would be through the corporation. Also, for the present at least, while the cost of credit through the corporations is low, reflecting the low rates of interest in the central money markets, it is not probable that the increase of margin to 3 per cent will drive much business away from the livestock loan companies.

Sources of Capital

Because profits have often been insufficient to cover the cost of operation, to absorb losses, and to yield a return on investment, private capital seeking profitable investment has not readily entered the business. This situation, it is true, has been worse in crop areas than in livestock areas. The capital of the present corporations has been obtained, as a rule, from sources other than the usual investment securities market. In the early years of the system many of the agricultural credit corporations provided their capital by requiring that borrowers purchase stock in amounts usually equal to one-tenth of the loan. Another source of capital has been affiliated organizations, particularly banks and cooperative marketing associations. Business men desiring to aid the farmers in their area and public spirited citizens have often contributed to the capital of credit corporations. In 1931 the Federal government provided funds to make loans to individuals to enable them to purchase stock of agricultural credit corporations serving the drought area. The State of Arkansas, in 1931, also appropriated $1,000,000 for that purpose.

Borrower Ownership

The plan of borrower ownership of agricultural credit corporations is modeled somewhat after that used by the national farm loan associations of the Federal Land Bank System. Modeled also after the national farm loan associations, the borrowers in early years were permitted to pay for their stock out of the loans. This practice is followed still by some organizations but the Federal Intermediate Credit Bank of Columbia has ruled for its district that such use of funds is not for an agricultural purpose and, consequently, is in violation of the law. The practice of paying for stock out of the loan has caused a great deal of misunderstanding and criticism of the Intermediate Credit System. Farmers apply for loans and at the same time agree to pur-

chase stock, not understanding that the two are separate transactions. They often do not understand when they purchase stock that they are becoming part owner of the corporation, but feel that the cost of the stock is merely held back from the loan as a guarantee, somewhat similar to a minimum deposit requirement of a bank. When the loan is repaid they feel that they should be refunded the cost of the stock. This cannot usually be done and consequently they often feel that they have been swindled.

One of the criticisms of borrower ownership, regardless of whether the stock is paid for out of the loan or not, is that the costs to the borrower are usually thereby increased. In addition to paying the interest on his loan, the borrower must usually forego a return on the investment in his stock and sometimes must lose a part or all of his investment, for credit corporations often fail. Moreover, if he ceases to borrow, it is very often impossible for him to sell the stock and recover his investment. Borrowers have often been misled by the use of preferred stock. Such preferred stock seldom has any voting rights and often is non-cumulative. In some cases the management takes whatever earnings are made by the corporation, in the form of salaries, leaving nothing for the stockholders.

Despite the misuse which has been made of the system of borrower ownership, the plan has much of merit in it. It makes the agricultural credit corporation essentially a cooperative institution. By this method farmers are able to associate themselves together to obtain the credit they need. It differs, however, from the cooperative agricultural credit systems in Europe and the credit unions in the United States, in that the cooperative agricultural credit corporations make no provision for the accumulation of savings. The savings feature of a cooperative credit institution may well be as important as the loan feature.

A possible development of agricultural credit corporations along this line could be brought about by the use of an installment stock whereby the farmer might pay for his stock in amounts equal, perhaps, to one-tenth of his loan each year, rather than buying that much stock just the first year only. By thus accumulating a large capital, the agricultural credit corporation would become stronger yearly and less dependent upon the extension of credit by the Federal intermediate credit bank. The farmer would ultimately be able to borrow very largely on his stock as security. This plan should await, however, the ar-

rival of the time when agricultural credit corporations shall have established themselves as places for sound investments.

Affiliations

The large scale cotton marketing associations of the South have, within the past eight years, organized sixteen affiliated agricultural credit corporations. Cooperative associations handling citrus fruits, potatoes, apples, dairy products, and livestock have, at various times, used agricultural credit corporations for financing their members. It may be of interest to note that the National Livestock Marketing Association and the National Wool Marketing Corporation each have associated credit corporations. Credit corporations have been used by cooperative marketing associations in order to attract new members and, in many cases, to enable members who have signed contracts to deliver their products, irrespective of the objections by creditors. For the most part, however, cooperative marketing associations have organized the corporations primarily to render their members an important additional service.

Local commercial banks have, in many cases, organized affiliated credit corporations to supplement their resources. Banks in areas which have highly seasonal requirements for loans can well make use of such corporations. By an investment of $10,000 or more in the capital of a credit corporation, the banker can finance his farmer customers' seasonal requirements through the corporation, thus removing the strain of the seasonal load from the bank and enabling it to maintain a stronger position with regard to the safety of its deposits. By operating the agricultural credit corporation with the same staff as the bank it has been possible at times for bankers to earn a very satisfactory return on their investments in such corporations.

The Place of Agricultural Credit Corporations in an Agricultural Program

What should be the place of agricultural credit corporations among the institutions which finance farmers? Is it desirable that these organizations should be used to finance the marginal farmers? The contention has often been made that credit through the Federal Intermediate Credit System should be on a different basis than credit through local banks of deposit; that the system was organized for the farmers and, therefore, the requirements

for loans should be less rigid than those of other banks. It is obvious that the adoption of such a policy would mean the financing of many marginal farmers who would otherwise be unable to obtain credit. But the income earned by the agricultural credit corporations and the Federal intermediate credit banks is insufficient for the large risks on such paper. As pointed out previously, the income of the corporations, particularly those financing the production of crops, is probably not more than enough to pay expenses and the income of the Federal intermediate credit banks from the discounting operations appears to be small compared to the costs of that service. Any attempt of these institutions to engage in business not of a sound banking character would ultimately result in their own destruction. Experience has already shown in the case of some corporations that the lack of rigid requirements leads to insolvency and failure. Furthermore, the establishment of a permanent organization by the Federal government to finance marginal farmers and to keep marginal land under cultivation could not be justified on economic grounds. Finally, this policy would add more agricultural products to our already burdensome surplus which another Federal agency, the Federal Farm Board, is trying to dispose of.

Can agricultural credit corporations by competition with local banks replace them in the financial structure of our farming regions? Which of the two types of institutions is the more efficient and the more suited to the needs of farmers? Agricultural credit corporations, because they tap the central money markets, have an elasticity not equaled by most country banks which ordinarily depend on deposits for their loan fund. Moreover, the supply of loanable funds available through agricultural credit corporations is not largely dependent on the income of the farmers in the area during the previous season as is the case for local banks, and consequently, crop failures or depressed prices do not restrict the amount of credit available to corporations which have adequate capital.

On the other hand, local banks have many advantages. They provide other services in addition to that of making loans, the costs being paid for out of the interest on the loans. The deposit and checking privilege particularly is a real service to the community. Moreover, a profitable use is provided for surplus local funds. To bring outside funds into a community for financing industry when local funds are available often is an unnecessary duplication of effort.

Local banks of deposit may be considered more efficient than agricultural credit corporations also because the funds which they lend pass through fewer channels. Funds loaned by the corporations are advanced first by the original investors to the intermediate credit banks, by them to the corporations, and by the corporations to the farmers. Funds used for loans by country banks are usually derived directly from the deposit of local funds. Moreover, because of the smaller number of institutions involved, local banks are able to provide loans more conveniently with less delay and detail, as described previously in this paper.

It appears that agricultural credit corporations have, in the long run, little advantage over local banks in the rates of interest charged. Rates of agricultural credit corporations are more subject to sharp fluctuations because they are based on rates of interest in the central money markets, whereas rates charged by local banks are often relatively stable and determined by custom or by usury laws. At the present time, agricultural credit corporations in some sections are able to lend at rates of 7 per cent or less, whereas banks in many places are still charging 8 per cent or more. Two years ago, however, agricultural credit corporations could not operate by charging less than 8 per cent because of the high rates of interest in the central money markets from whence they obtain their funds. It is probable that when rates of interest go back to normal, there will be very little difference on the average in the rates which may be charged by corporations and by local banks.

There are several conceivable fields of operation for agricultural credit corporations. The most important perhaps is that of supplementing the limited lending resources of banks in capital deficit areas. In this capacity such corporations can render a real service to agriculture.

In some communities where there are sufficient local funds to meet the credit needs, it is conceivable that the best interests of all concerned would be served if the deposits of banks, especially the savings deposits, were partly invested in securities other than local farmer paper. This policy would contribute to the stability of the banks and to the safety of the depositors. To release such funds from local use, agricultural credit corporations could well be set up as adjuncts to banks to meet at least some of the needs of farmers in the area.

It may be desirable to form agricultural credit corporations in regions where there are plenty of funds in order to set up

competition for banks. In some localities, either one banker alone or several working together have a control of loanable funds which approaches a monopoly. In this way the bankers are able to dictate their terms to the farmers. A finance corporation owned by farmers might in such a case be valuable in bringing about wholesome competition.

Another field for the operation of agricultural credit corporations is that of emergency finance institutions. Their source of credit is ample for this purpose. There are two handicaps, however, to their use in such manner. In the first place, when emergency credit is needed, many farmers often cannot put up sound acceptable paper and, in the second place, institutions of temporary character do not have a trained staff nor an established line of credit. Despite the handicaps, agricultural credit corporations can serve a real need in emergencies. They have demonstrated that ability since the drought period of last year.

Last of all, the use made of agricultural credit corporations by farmers' cooperative marketing associations suggests another need for such organizations. Corporations affiliated with cooperative marketing associations have been used to attract new members, to enable members to market their crops cooperatively despite the antipathy of local credit agencies toward the cooperative, and to furnish members credit when it could not be obtained from local sources.

MARGINAL LAND AND COTTON PRICES

W. W. Ashe

In planning for the stabilization of the price of cotton, the Federal Farm Board was faced on July 30, 1930, with a domestic carryover of 4,500,000 bales. This was about one-third of the domestic crop of about 14,500,000 bales for that year.

The current (1931) year's crop was estimated by the Department of Agriculture, upon the August 1 condition, at 15,584,000 bales of 500 pounds. The domestic carryover (July, 1931) is placed at 6,369,000 bales and that of the world (by the New York Cotton Exchange) at 9,000,000 bales. The crop of 1930 was the yield from 44,000,000 acres. The larger crop of 1931 will be the product of 40,129,000 acres. Upon an acreage smaller by 10 per cent than that of 1930 the estimated yield this year is 7 per cent larger. Notwithstanding the reduction in acreage, the larger yield has added to the surplus and has reduced the price below the cost of production.

Of the land planted to cotton the current year, not less than six million acres can be classed as land of marginal charcter, the yield from which contributes the larger portion of the surplus crop, periodically forcing down the price of this commodity to low levels. Possibly as much as ten per cent of the present crop was produced upon land which is marginal under existing economic conditions and with present standards of living. A far larger portion was grown upon land which, while not marginal, is yet so hilly or so sandy that productivity can be maintained only by a most liberal use of commercial fertilizers, the cost of which minimizes the possibility of profits.

The marginal land of the cotton belt is, in part, rough land in the Piedmont Region of the Carolinas. It embraces the hills, both the "red clays" and sandy-soiled, which stretch through middle and northern Georgia. It includes quite similar land in Alabama and a number of well-defined areas in Mississippi, particularly in the northern portion of that state. There is also a belt of hills across northern Louisiana and a dissected area in middle Arkansas in which many of the farms have marginal conditions. When living was less complex, the farming of this land may have been satisfactory in furnishing a mode of life. Now, worn and depleted, this land is failing to meet the requirements of higher social standards.

There is an equal area of similar marginal and submarginal

land already cleared, much of it comparatively recently cultivated, but not used in the production of this year's crop. In addition, there is a very large area of land of the same general type which has never been cleared, which is available for cotton production. Much of this land already cleared was actually in cultivation, and producing cotton at a comparatively recent date. In the decade between 1920 and 1930, the number of farms in Georgia decreased by 54,480. These abandoned farms lie largely within the cotton producing counties. Although marginal and abandoned, they are still potential cotton-producing lands.

At the same time that deteriorated land is being abandoned in Georgia, the extension of cotton farming to land of the same type is rapidly taking place in Mississippi and Louisiana. The decrease of 54,000 farms in Georgia, largely within the cotton belt, was offset by the establishment of a larger number in Mississippi, in Louisiana, and in eastern Texas within the hilly uplands recently cut over for timber. In Mississippi alone the number of farms increased during the past decade at the rate of more than 4,000 a year, somewhat less than the rate of decrease in Georgia. With the price of cotton stabilized at a figure assuring satisfactory profits to the grower, this rate of increase in the establishment of new hillside farms on stump lands in Mississippi, in Louisiana, in eastern Texas, in Arkansas, and in southeastern Missouri would be greatly accelerated. There is no such unused area available for the extension of the acreage cultivated either to wheat or corn. It is possible to extend the acreage planted to either of these crops only at the expense of some other crop.

Most of this potential cotton land is stump land, that is, it is cutover timberland. It is largely owned by lumber companies or by subsidiary land or development corporations, and through foreclosure of mortgages has passed into the possession of banks or insurance companies. These holdings, in their cutover condition, are a liability, not an asset, to the owners, of whom many had well-developed plans for disposing of their lands to settlers for farms as rapidly as the timber was cut. These plans largely failed due to the agricultural debacle, and the stump lands of the lumber companies are now being marketed piecemeal in place of being colonized in blocks.

The agricultural crisis has emphasized the fact that the farms upon the hilly lands of the south are largely marginal in character. Similar hilly lands make up the larger part of the farms

being added yearly to the cotton producing acreage. The probable length of use of these marginal lands depends upon the rapidity with which erosion depletes the surface soil of its stored humus, naturally scant enough in the upland soils of the cotton belt. Eventual abandonment has been the sequel to their use in Alabama and Georgia. It can be expected that this will be the sequel to the cultivation of the stump-land farms now being opened up in the states at the southwest end of the cotton region. The soils of the Georgia lands now being abandoned are intrinsically the superior.

In addition to the hilly stump land which is being opened up as new farms, the recently abandoned land, not only in Georgia but in the entire eastern cotton belt from Virginia to Alabama, is all available for replanting to cotton whenever its price assures a fair profit. Thousands of men who gave up these marginal farms to become laborers or mill hands will return to their land as soon as conditions seem to indicate that they can better their status. The enormous area of stump land is available to add to the area of recently abandoned land already cleared and merely lying fallow.

Under these conditions, the stabilization of the price of cotton from year to year by the temporary withdrawal of the surplus from the market and its gradual release will be increasingly difficult, if not impossible.[1] It will become necessary to control the acreage.[2] Even with acreage controlled and with prices satisfactory to the grower, it would be possible through the adoption of better methods of tillage, and by the use of improved seed, to increase the yield enormously. This is already in process. Large planters with suitable land are employing machinery and adapting other methods of reducing cost and increasing crop yield. The Negro farm hand with his melodies and mules is giving way to the farm mechanic who runs tractors with gang plows, gasoline cultivators, and other specialized machinery.

While the greater portions of these stump lands are of marginal agricultural character and can be converted into farms of poor, or at best of only medium quality, large areas of this land have excellent timber-producing capacity. Had they been managed as forest land, they could readily have been turned into

[1] The Cotton Stabilization Corporation now has on hand (August 19, 1931) 1,300,000 bales and on July 9 the American Cotton Cooperative Association and its members held less than 2,000,000 bales. Notwithstanding these relatively large withdrawals from the general market, the price has continued to decline.

[2] This paper was submitted for publication March, 1931, but some of the figures were subsequently included.

profitable tree-growing investments. As such they would have yielded fair returns to the owners and would have been capable of bearing even a higher tax than that now assessed. Louisiana has an excellent law designed for this purpose. It assures moderate taxation for a definite period. There is a provision for leaving seed trees to assure restocking, a provision which saw mill companies have openly and flagrantly ignored. It is accidental if portions of such lands have restocked and now give promise of even paltry returns.

These stump lands will not be needed for many years in our agricultural program. When used for farming purposes, they are subjected to destructive cultivation. After being handled in this manner for a short period the soil of such areas as have a badly broken surface will deteriorate. This will eventually necessitate either public control or will require the use of public funds to take care of the soil erosion problem which will result. Even when it does not become necessary to reclaim the gullied hillside land, after it has been worn out by cotton farming, it will be necessary to open up the channels of the streams choked with sands and silt in order to prevent the flooding of the valley lands. This is already one of our serious economic problems. Further development of land of this type makes the situation more serious.

Although these lands are not needed for the production of cotton, the "money crop" for which they are agriculturally best adapted, they are needed for growing timber. We are still drawing upon the heavy natural stands of old timber for our major requirements. The eastern states, even with such natural stands to draw upon, have so far been unable to meet the requirements of their own local markets. Most of the lumber companies owning land took the position that their interest in it terminated upon the cutting of the timber. The states acquiesced in this view. As a result, around two billion board feet of lumber are annually brought from the Pacific Northwest coast to supplement the local eastern supply. The heavy natural timber stands of the Pacific Coast have a limited life themselves. Within fifteen years the largest remaining stands of eastern yellow pine will have been cut; within thirty years the heaviest stands of western timber which are readily accessible will have been marketed. Within this latter period and even allowing fully for further shrinkage in our per capita wood requirements, the eastern states will have need for all and more wood than can be grown in the East. The stump

lands in the southern cotton states, in place of being forced upon an already oversupplied agricultural land market, should be devoted to their logical use, that of growing trees to meet already pressing industrial requirements. If developed as producing timber lands, they are capable of yielding a reasonable public revenue for the support of local governments.

The Interstate Commerce Commission has established a precedent which, if followed in the case of these potential cotton lands (which would be marginal if cultivated), would eliminate them as an agricultural problem to be reckoned with in the future. An application was filed by the Virginian Railway on February 17, 1923, for an extension in Wyoming County, West Virginia, for "a certificate that the present and future public convenience and necessity requires or will require the construction of such an extension." This extension had as its object the opening up of new coal mines. No objection was presented to the building of this extension; yet the Interstate Commerce Commission denied the application. As one of the grounds for refusal it is stated in the brief of the decision that "There are at present more mines in the country than are consistent with the most effective use of the carriers' equipment and their aggregate capacity (i.e., of the mines) greatly exceeds the country's demand."

The Farm Board, in expending public funds, has discretionary powers, yet why should public funds be expended for stabilizing the price of a crop when at present more lands are available in the country for its production than are needed and when their present and future "aggregate capacity greatly exceeds the country's demand"; when additional lands are being developed to extend the acreage in this crop; and when the interested states, by promoting development of more farming lands, lend their aid in complicating the problem?

Why should the Farm Board risk the partial loss of public funds in attempting to control prices through the storage of surplus production unless the local communities and the producers' organizations take concerted action, not only to limit present acreage, but also to limit the further increase in unneeded acreage, "adding the sum of more to that which already is too much?"

The owner of steep and potentially marginal farming land has no constitutional guarantee that his land can be sold for farming purposes. Heretofore the only use of this land has been for growing trees. It was bought and paid for, if paid for at all, inde-

pendently of the timber upon it, upon the basis of forest land, and if taxed at all has been taxed upon this basis. The existing use of the land might well determine its future utility, until "future public convenience and necessity" call for a change in use.

The Farm Board, with a supply on hand of 1,300,000 bales, recently recommended that every third row of cotton be plowed up by the grower after the expense of planting it. Conditions must be desperate to suggest such a desperate remedy. This would benefit the holders of cotton rather than producers unless the price should advance more than one-half. It has been advocated that the states be given the right to regulate the acreage. The futility of expecting the states to agree upon a plan for concerted action is indicated by the suggestions of governors of different states in the crisis this year. There will inevitably be some who will accept no plan unless their particular state benefits at the expense of others. Not merely acreage of lands now available must be considered, but potential lands as well.

Individual state governments of themselves would hardly be expected to establish upon their own initiative such a policy of restricting further clearing of stump lands. The pressure of large land owners, the holders of their notes and bonds, the influence of their bankers, would be powerful factors to preclude it.

The Farm Board, however, could refuse advances to associations, could refuse to handle and provide funds for storage of surplus crops within states which decline to control the use of existing cleared lands suitable for cotton culture. The Farm Board could extend this policy so as to limit the opening up of additional marginal lands for the production of cotton, lands, which, used for farming, will eventually call for a use of public funds for their rehabilitation. Under these conditions the states, loud in their advocacy of farm relief, must decide themselves between the farmer and the speculative holder of lands. Existing utility could be the grounds of decision.

PHILOSOPHY OF AEREBOE AS RELATED TO SCOPE AND METHOD OF RESEARCH IN FARM MANAGEMENT[1]

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The problem of how to manage a farm or any real estate so as to obtain the greatest possible profit has existed since we have had settled habitations. However, it was not of such great importance so long as human beings had enough fertile areas at their disposal. The existing forms of farm organization were simple and directed by centuries of experiences, which had been transformed gradually into established practices. In Germany the change took place only with the beginning of the great discoveries in the field of the natural sciences and with the change in the laws of property rights at the beginning of the nineteenth century. Many scientists directed their attention to the field of agriculture which was the source of the sustenance of the people and they also tried to make the life of the whole nation richer by encouraging agriculture. They soon recognized that in agriculture also there are certain laws of nature governing certain phenomena. These laws have a fundamental bearing upon agricultural development. Traditional rules and practices were gradually narrowed and their place was taken by carefully studied management which could claim to be scientific.

With the progressive division of labor in agriculture, there soon developed a division of the material in the scientific field of agriculture. The great reformer of German agriculture, Albrecht Thaer, was the first to give an outline of the material which had to be treated scientifically.[2] But while most scientists were occupied chiefly with the technique of agriculture, which they carried to a relatively high stage of development by specialization in the fields of animal and plant production, they neglected the field of farm economics and valuation in agriculture.

The first man in Germany to study economics in connection with the development of agriculture was Heinrich von Thuenen, who published his discoveries in *The Isolated State,* in 1826. He investigated the influence of the economic situation upon the organization and the income of the farm mainly through studies made on his own farm, Tellow, but he did not come to practical

[1] Paper read at the Annual Meeting of the Western Farm Economic Association at Pullman, Washington, June 10, 1931.
[2] Albrecht Thaer, *Principles of Systematic Agriculture.*

conclusions which could be used because he did not have at his disposal the necessary foundations at that stage of science. The merit of his work lies in the fact that he showed the workers in the field of farm economics new ways and methods of studying, which later gave rise to new studies in that field. The neglect of the study of farm economics in contrast to the more intensive attention given to agricultural technique was due to certain conditions in the scientific and practical field. It must be taken into consideration that in the scientific field the professional science of agriculture was based chiefly on the natural sciences in which jurisprudence, administration, and political economy were of no importance. In the practical field it was an especial hindrance to farm economics that the development of the agricultural production technique in the nineteenth century received a great impetus and thereby the interest in farm economics was checked. At that time the chief means of obtaining high net returns was to keep in close touch with the technical achievements of agriculture. Moreover, it was comparatively easy for the scientists who pursued their studies in agricultural technique to meet with great success, particularly if they specialized. They were able to do so without having extensive general experience in agriculture. In farm economics, the situation was and is quite otherwise. Here special skill in one line cannot suffice to make progress. A broad knowledge of the whole field of agriculture in its scientific respects and extensive experiences in the agricultural practices are both necessary. This involves long and laborious training. The man who strives for such a goal generally prefers the practical work to the scientific, especially when it is financially more lucrative. As a result, in the past the most experienced men in agriculture adhered to the practical side and were lost to farm economics as a science.

The studies in the field of farm economics were of more general nature until toward the end of the nineteenth century when Frhr. von der Goltz appeared. He was an outstanding professor of farm economics at the University of Jena, and later at Bonn. Von der Goltz stressed the necessity of a new way of studying farm economic problems without adopting the method of von Thuenen. However, the direction which his student and assistant, Friedrich Aereboe, gave the study of farm economics in Germany is now generally recognized.

It might be of interest to learn something about the training and experiences of Aereboe. The most remarkable fact about his

training is the fine balance of the practical and the theoretical. After the completion of his course of studies in agriculture, while he was assistant at the agricultural school at Kappeln in 1866, he made his first acquaintance with the problem of valuation in agriculture when he conducted a survey of the livestock on small farms in the province of Schleswig-Holstein. His task was not only to survey the farms and the value of livestock but to investigate their relation to the different natural conditions on each individual farm. Later he received training in drainage, irrigation, and other field improvements from the well-known agricultural engineer, B. Davis, in Hamburg. However, the whole direction of his thoughts and efforts in agriculture was determined by the influence of von der Goltz at Jena, under whom he was first student and then assistant and whom he later succeeded as professor of farm economics at Bonn.

In the first part of the decade, 1895-1904, Aereboe was chief of the division of farm accounting in the German agricultural society at Berlin, the largest agricultural organization in Germany. The latter part of this time he was general manager of an estate of several large farms, in the reorganization of which he was highly successful. From 1904 to 1908 Aereboe was professor of farm economics and valuation in agriculture at various universities. These years gave him an excellent opportunity to deepen and to complete his practical experiences by means of scientific studies. In the fall of 1908 he received the commission from the Minister of Agriculture, Domains, and Forests to prepare a revision in the rudiments of valuation for the agricultural credit institutions of the Province of Brandenburg. In order to do this he held a position at the Haupt-Ritterschafts-Direktion in Berlin. This experience was especially valuable for Aereboe not only because all the extensive material was accessible to him but also because his position as chief of the Advisory Board of this institution with resulting general management of several farms kept him in touch with the practical side of agriculture. The government always sought his cooperation in all questions of farm economics, valuation, and taxation in agriculture.

At the present time Professor Aereboe is chief of the department of farm economics at the Agricultural College in Berlin. Besides his thoroughly scientific and practical training, Aereboe has profited by every opportunity to perfect his knowledge by traveling through other countries and thus coming to understand social and economic laws with special reference to agri-

culture. His most remarkable books are: *Agrarian Policy* (Agrarpolitik), *The Valuation of Farms and Real Estate* (Die Beurteilung von Landguetern und Grundstuecken), *Principles of Farm Economics* (Allgemeine Landwirtschaftliche Betriebslehre).

In order to explain the scope and method of his research in farm management I will outline his book dealing with the Principles of Farm Economics. In this book Professor Aereboe divides the whole science of agriculture into two main fields: (1) The public or national phase of agriculture or Agrarian Policy; (2) The private or commercial phase of agriculture or agriculture as a private enterprise.

We are here concerned only with agriculture as a private enterprise. This is subdivided into the two main groups: first, the science of agricultural technique; second, the science of farm economics. The science of agricultural technique concerns itself with the technical possibilities of the production of animal and vegetable goods, that is, with the laws which govern the growth of plants and animals, and also how to apply these laws for the production of the greatest possible quantity and highest quality of agricultural products. Agricultural technique is, therefore, mainly based on the natural sciences.

The science of farm economics, on the contrary, has nothing directly to do with investigations in the field of the natural sciences or with the application of the natural sciences to agriculture. It accepts as facts the doctrines of the natural sciences elaborated by the agricultural technique and combines them with the natural and economic conditions of agriculture. Thus it is based mainly on agricultural technique, economics, jurisprudence, and last but not least, on agricultural experience.

Definite lines between the field of agricultural technique and farm economics cannot be drawn; and moreover, the relation and coordination is too close to permit it. The study of farm economics is subdivided by Aereboe into four groups: (1) The study of farm management (Betriebslehre); (2) The study of tenure in agriculture (Lehre von Pachtvertrag); (3) The study of valuation in agriculture (Taxations-oder Abschaetzungslehre); (4) The study of farm accounting (Buchfuehrungslehre).

Furthermore, Aereboe divides the study of farm economics into general and special. The latter is concerned with the farm economics of a narrowly defined district or with local conditions. It is, therefore, limited in time and place. On the other

hand, the general farm economics which Aereboe teaches in his book *Principles of Farm Economics* is limited neither in time nor in place. He has subdivided this latter field into three main groups: (1) The general principles of the factors of production and the enterprises in agriculture; (2) The general principles of farm organization; (3) The general principles of management. The first part of his book is devoted to general considerations of the study of farm economics, to the problems of the farm as a private enterprise, and to explanations of the difference in the sizes of farms and resulting problems. The second part covers the means of production and how production factors influence individual enterprises on the farm. From the third part concerning the principles of farm organization we obtain best the idea of his scope and method of research in farm management. He begins the discussion of questions in organization first with general principles of forms of organization and then proceeds to explain the most favorable relationships between the factors of production. In discussing these problems he proves that no single activity guarantees any success in agriculture, but rather a favorable effective relationship of the several activities. There is a most favorable combination of all the activities of the farmer for which he has to strive. The success of a farmer does not depend primarily upon the question of whether he works intensively or extensively, but rather upon how successful he is in arriving at the most effective relationship of all his expenditures and activities.

Aereboe says, relative to the field of farm economics—

> Farm economics has to do with the farm as an organic entity in which the individual element has to coordinate with the whole, regardless of how the individual enterprise comes out, considering only the service to the whole. From the point of view of the farm economist, for instance, high physical production from plants or animals never is an end in itself but merely a means to an end. It must assign a disadvantageous place to one crop in order to give another one a better place and thereby enhance the income from the farm. Many more examples could easily be given.

As a starting point for his investigations of farm organization, Aereboe takes first the existing accommodations and the available labor. All the existing accommodations must be brought into full utilization and in such manner as to make continued use of the available labor. After that he explains the combinations and correlations of the different methods of cultivation, the individual crops, and the means of utilization of all products in the division of labor and land. The next step is the explanation of

the most suitable forms of organization for the best use of the factors of production, including the land itself. He investigates the different forms of organization from different angles and under varying conditions. Much space is devoted by Aereboe to the influence of price upon the forms of organization and land utilization. In his discussions he consciously places the influence of the economic situation, especially the influence of sale prices and production costs upon the form of agriculture, ahead of the influence of natural conditions. On an extensive area and over a period of time the influence of the former is of greater importance than the latter. The discussion of the influence of the natural conditions upon farm organization includes the influence of heat, precipitation, soil, etc. This discussion is followed by explanations of the influence of the status of technique, of the legal conditions attending property rights, and of the distribution and location of the fields.

In the fourth part of his book Aereboe discusses farm management. He devotes considerable space to the factors of personality and ability of the individual farmer. In this part we find a thorough study of the importance and the forms of farm management, the financial conditions, and the personal qualifications of the farm manager. He explains the practical and theoretical training which every farmer nowadays should have and gives an outline of the means of assistance which are at his disposal.

In summary I would like to mention that before the time of Aereboe the textbooks on farm economics gave a description of the individual enterprises in agriculture and a treatment of the questions of farm organization involved in connection with them. Aereboe does not distribute the problems of organization over a series of chapters in which every chapter explains one branch of agriculture. On the contrary, he considers the farm as an inseparable organic entity and shows how this unit assumes and must assume different forms under the changing influences of external and internal conditions of vital importance. He applies the biological method of investigation which is used in the cosmos; namely, the method in which investigation is made, of how the different influences of surroundings affect the origination, growth, and decadence of the organisms in their different shapes. Hence, Aereboe considers every impetus which has any influence upon the entirety according to the nature and importance of this influence. In that way he investigates one after another, how changes in the economic situation, changes in soil, heat, precipi-

tation, legal conditions, etc., influence and must influence the farm as a whole and each action of the farmer. Thus he uses the very conditions which determine the farm organization as a basis for his division of the material in farm economics. By that method he better analyzes the relationship among the individual enterprises and activities in agriculture. He calls the cost of production method of analysis unsatisfactory and insufficient because it dissects the body of the farm in an anatomical manner and in so doing kills it for the purpose of real study of economic efficiency.

In order not to be misunderstood I must mention that Aereboe does not deny the necessity of cost accounting for farm management but he uses it merely for the control of farm business and not for the final analysis of economic efficiency. It is evident that the indirect influence of one enterprise upon all the others on the farm can hardly be comprehended by cost of production figures. The cost of production method, for instance, might show for one enterprise a negative return, but for the purpose of obtaining a higher rate of return on the entire investment on the farm, it might be necessary to maintain this enterprise. Consequently it is not of such great importance for the farm manager to consider or calculate the profitableness of one farm enterprise, but to consider each activity and its effect on others and on the whole farm.

I would like to follow up this subject a little further. Supposing a certain farmer has the following enterprises: Potatoes, wheat, sugar beets, feed crops, dairying, and hogs. Supposing further that there is a good market for potatoes and that the costs of producing potatoes are such that the farmer can make a good profit. He therefore plans an extension of his potato production because the cost of production figures show him the profitableness of this enterprise. Such an extension, however, would result in conflicts with the other operations so far as utilization of labor and equipment is concerned, not considering the conflicts resulting from natural or economic conditions. Extra labor and perhaps extra machinery would need to be supplied in order to take care of the expansion. Other crops would be reduced to an extent which probably would mean an incomplete use of equipment already on hand for them. Moreover, it is likely that these latter enterprises would be somewhat neglected in favor of the new main enterprise, with the result that their production would be materially lessened. The net result in such a case would be, ac-

cording to Aereboe, reduction in the total farm income. Consequently, in making changes in the present farm organization the cost of production figures are not decisive, but rather the influence of the change upon the net return of the whole farm considering all influences among the enterprises. Hence, research in farm management cannot start out with figuring the production costs, but with the study of the adaptability of farm resources or means of production to the natural and economic forces playing on that farm.

Aereboe says, therefore, at the end of his book in relation to the methods of research in farm management,

> "Statistically you can work neither one-sided inductive nor one-sided deductive, but must use both methods of research one with another and changing one after another. The deduction method is preferred because we are lacking in research material and because it is necessary that men are forced to a sharp definition of the concepts with which they are operating."

EXTENSION WORK IN RELATION TO LAND UTILIZATION[1]

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This subject is a very broad and inclusive one indeed, and in this brief paper I shall make no attempt to treat it exhaustively. However, I am going to venture a few observations concerning the relationship of extension work to land utilization, referring often to Montana, and assuming that the Montana problem does not differ fundamentally from the problem in other states.

In the days of land settlement in Montana, from 1880 to 1915, the attitude toward land was quite different from what it is in this year, 1931. The early settlers, like early settlers elsewhere, were fully occupied in a nip and tuck struggle to win from the soil the classical subsistence living of food, clothing, and shelter.

Agriculture, founded on newly turned sod, was largely self-sufficing. Agricultural machinery—the plow, the binder, and the wagon—was, when viewed in retrospect, comparatively simple. Farm power was biological power and farm transportation, at first by oxen and later by horses, was very restricted in cruising radius.

Such characteristics of pioneering Montana agriculture were, of course, identical in all major respects with those of pioneering agriculture in the country as a whole. Because such an agriculture yielded so little above a subsistence and because of the assumption that an ever-increasing population would depend mainly upon agriculture, there had early evolved the traditional fear that population would outstrip food supply.

Out of this traditional fear there developed an attitude of reverence toward land that was almost religious in nature and at the same time there developed the deep-seated conviction in the mind of society that the survival of the nation was dependent upon the ability of farmers to wrest a living, principally food, from the land. Deep concern about this problem was responsible for the growth of publicly supported research in agricultural production near the beginning of the twentieth century. Later, upon the passage of the Smith-Lever Act, extension work was launched with its projects and demonstrations, as a sort of evangelical agency interpreting the results of research into a

[1] Paper read at the Annual Meeting of the Western Farm Economic Association at Moscow, Idaho, June 11, 1931.

gospel of better agriculture. Extension work in its early days had the general welfare of the rural population at heart, but it was also, perhaps somewhat unconciously, most seriously concerned with the problem of providing the population with the so-called necessities of life. In view of the initiating forces behind extension work it is very easy to understand why it was at first mainly concerned with improving the techniques employed by farmers and in increasing agricultural output. It is also easy to understand, in view of the fear of food shortage held for generations, how the momentum of this reasoning behind extension work has carried this objective forward to the present. With a zeal to produce which amounted almost to fanaticism, we did not, in the early years, recognize nor concern ourselves with diminishing returns in the way we do today, nor was the comparative advantage or disadvantage of any particular type of production in any particular area as clear-cut as it is today. Labor and capital and the use of land were largely immobile from area to area, and production was more or less self-contained by areas or by communities or even by farms.

In 1931 it appears as though the battle to save population from starvation has been won. With the development of improved technique in growing crops and livestock, the farmer finds himself reasonably well tooled in the art of agricultural production. The steam engine and particularly the gas engine have revolutionized transportation and, together with the above improvements in technique, have developed and brought into competition with Montana agriculture the most remote frontiers of the world. The biological power of the earlier days has largely been replaced by gas-and-steel power. With increased amounts of capital applied to land, management has increased, while physical man labor has decreased, in importance. The self-sufficing nature of farming has been greatly modified, and Montana agriculture has, like agriculture elsewhere in this country, been pushed out into the main stream of an exchange economy.

With these changes making for greatly increased efficiency in agricultural production has come increased specialization and a wider assortment of goods and services from which the farmer can compose his standard of living. With rising standards of living for farmers and for other groups of society, there is developing a quite different attitude toward the age-old tradition of an increased population. It is now recognized, especially in this country, that there are satisfactions other than food which

contributed to the well-being of the population, that there is no particular virtue in mere numbers of people, and that populations tend to strike a balance between the standard of living which they deem desirable, on the one hand, and the natural resources available on the other hand. In a nutshell then, we have an ever-increasing efficiency in the production of food and at the same time a declining relative significance of food in the standard of living.

These fundamental and dramatic changes are of utmost significance for, due to them, extension work finds itself cast in a new rôle and "the use of land" has a much different meaning from what it had fifteen years ago.

It might almost be said that land no longer lends itself to classical definition. It is no longer quite correct to say that land is characteristically scarce when we are using only four hundred million acres of land in this country out of a potential acreage of one billion acres. Even that clearest-cut characteristic of land, immobility or place location, is continually being so modified by improvements and developments in transportation that it is of only limited and transitory significance. Since we no longer need to use all available land as intensively as we know how, there has arisen the problem of land utilization wherein we consider the sorting and culling of lands to harmonize these uses with the laws of comparative advantage, and looking to extension work we find that it is no longer chiefly concerned with merely keeping people biologically alive. Further, we now clearly see that only part of the people of a population need be attached to the land as agricultural producers. These are still somewhat iconoclastic ideas to the man in the street, and they sometimes frighten him. Witness his concern over the decrease in agricultural population and number of farms.

A new philosophy of extension work will be concerned with redirecting the activity of farmers from handicrafts of self-sufficiency to such a utilization of capital, production techniques, and land as will yield them money incomes, enable them to maintain a relatively desirable standard of living in an exchange economy. At this point I would like to comment upon the often expressed idea that it is possible to have two levels of desirable living for farmers. In popular language, it is stated that some farmers will "farm to make money" and others will "farm to make a living." This is a somewhat ambiguous statement, and if by "living" is meant strictly self-sufficing agriculture, then

such an ideal is undesirable and practically unattainable. As a matter of fact, the direct contribution of the farm to family living is largely limited to food. To illustrate: suppose we assume a budget estimate, say $1500, as the minimum requirement for a desirable standard of living. The farm can be made to contribute from $400 to $500 worth of food, but in order to obtain the other items of the budget, clothing, health, education, recreation, etc., the farmer must produce some product which he can turn out into channels of an exchange economy for a money income. Stated tersely, all farmers are farming to make a living and in order to make that living they must have money income.

In view of the fact that we must now consider sorting our lands and shaping them into uses to which they are adapted in the light of their comparative advantages, and in view of the fact that extension work must concern itself with assisting farmers in obtaining money income, it becomes very clear that there is need for close correlation of work in extension and in land utilization. In the past there has been much unity of purpose in the objectives of work in extension and in land utilization, but that unity of purpose was often to a considerable degree unconscious. Now, there is need for a conscious correlating of activity in these two lines. In this, extension work has a more important function than ever before in that it can carry on vitally important educational work concerning the sorting of lands, and the organization of production techniques on lands once sorted, which will serve to guide farmers in their money making activities.

Such coordination of work in extension and in land utilization may be developed along at least three major lines.

First, in the so-called production projects in extension, agronomy, animal husbandry, etc., the fitting of recommendations to harmonize with diminishing returns encountered. In this connection the comment might be made that research in the "production" phases of agriculture sets out an *assortment of techniques,* that is, ways of producing a crop or an animal. The problem of the farmer, and consequently the problem of extension, is to choose the technique or techniques from this assortment which is best suited to his individual farm and type of farming. In this connection there has been much confusion as to the meaning of efficiency. Extension workers and farmers have been sharply criticised because they have been interested in growing two blades of grass where one grew before. Insofar as the produc-

tion of the second blade of grass has pushed the use of the land and other production factors beyond the economic point of utilization, the criticism is justified, but insofar as the turning out of the second blade did not do this, then such condemnation is not justified. Surely, there is no ground for objection to higher output per unit of input if it represents a true increase in efficiency. Extension work in "production," by selecting and recommending the proper techniques, has as significant a rôle to play as ever.

Second, through the organization of extension projects in farm management so that the purposes and achievements of these are in harmony with the forces of comparative advantage involved. In planning and carrying out extension work in farm management it should be recognized that such work must be adapted to, and responsive to, not only the land resources but also to the skills of the agricultural technicians, to the character of labor, capital, and management available, and to market demand. It should also be recognized that land is utilized only through the medium of production plants, that is farms and ranches, and that land utilization and farm management are blood brothers.

Third, through the organization of extension, land utilization projects whereby the facts regarding land in any particular state or county are organized to reveal in an extension way the significance of the land resources in the production plants set up and operated by farmers. A most important objective in such a project is the presenting of such facts not only to farmers but to business men, landlords, and the public in general.

In Montana we are interested in all three of these avenues of approach and in the Department of Agricultural Economics we are immediately concerned with the last two. We are attempting to harmonize our extension work in farm management with the land resources which we have in the state. In an attempt to achieve this end we have organized an extension land utilization project. The work under this project logically falls into several divisions.

First of all an inventory of the land resources is necessary. Considerable research material from the soil survey and weather records is available or is being made available and needs only to be assembled and put into extension form. The concrete expression of this land resource is in terms of productivity and we are, therefore, developing productivity maps for counties and for areas. In making these productivity maps we are working in co-

operation with the Soil Survey Division, classifying the lands of the state according to their productivity. On the dry-farming lands, we have been using the yield of spring wheat on summer fallow as an index and have set up four classifications; first-class land being that which will yield 22 bushels to the acre, second-class land that which will yield 18 bushels to the acre, third-class land that which will yield 15 bushels to the acre, and fourth-class land that which will yield 10 bushels to the acre. For the grazing lands we are using carrying capacity as an index; first-class land being that which will carry one mature head of cattle on 15 acres for a 10-months' period, second-class grazing land that where 20 to 25 acres are required, third-class grazing land that where 40 acres are required, and fourth-class that where 60 acres are required. In this classification of grazing lands the cooperation of the Forestry Service as well as the Soil Survey Division has been enlisted. On irrigated lands, where the problem is more complex, we are attempting to establish a classification based on not only yield of crops but variety of crops as well. Paralleling this development of a scientific classification of lands, we are also obtaining yield histories from farmers in order to check the classifications against their experience and particularly in order to establish the classification and its philosophy in the minds of farmers and the public in general. At the same time that we obtain yield histories from farmers, we obtain simple farm organization records for the purpose of obtaining a cross-section of the production structure which is now on the land.

In considering the all-important problem of how farms and ranches should be organized and managed in the future, we are, after obtaining the above inventories, looking to information from the experiment station and production specialists concerning available technical skills, and to the outlook for the prospective demand for the products of the land. In setting up suggested farm organizations and management, farm management extension work in Montana is fortunate in having available not only the results of research in the technique of production but also the results of research which have been carried on in farm organization and management. This latter is limited to the dry-farming lands and there is a very definite extension need for the results of similar work in ranch and irrigated farming. The acreage, the equipment, and the farm management practices, in other words, the production plant and its operation required to yield a given income for family living will vary according to the class of land. In making recommendations concerning a specific

farm or area farm management extension can only generalize unless it has at hand a definition of the land resources, an inventory of the technical skills available, an interpretation of the outlook, and information concerning the principles of farm management involved.

We are hopeful that the development of such a land utilization project will result in a more scientific program of extension work. The shadowy function of land in production is poorly understood by the public in general, and popularly accepted myths regarding land are commonly barriers to progress in all lines of extension work. By developing the definition of lands in terms of productivity and by a better definition of farm set-ups possible thereon, it would seem that extension specialists working with outlook, with production techniques, and with types of farming would be able to apply and carry on their work in a much more scientific manner. From such definition there should also develop a clearer understanding of terminology, for instance such terms as "diversification" and "specialization." Also, in matters pertaining to agricultural credit it would seem that farmers could be given considerable assistance in presenting their assets in an understandable statement and that lending agencies would have a much better basis for judging the soundness of the applicant's production organization. Also, it would seem that with the information brought out by such a project, the formulation and interpretation of public policy in such matters as reclamation, acreage adjustment, and control of the public domain could be more rationally developed. It is to be pointed out that in working toward these ends in a state, Montana for example, it would be very desirable to have similar information on competing areas which are turning out products in competition with the products or potential products of Montana lands. That is, there is a need to know what the comparative advantage of Montana lands is.

In conclusion, it is worth recalling the fact that, since ours is a dynamic society, adjustment is a continuous process. Extension workers will have the problem of land utilization to deal with for some time to come. Since in a dynamic society *lands do flow from one use to another,* it is possible that both research and extension could profitably consider means of increasing the mobility of uses of land, of land ownership, of farmers, and of capital. This is a field of considerable possibility in which little work has been done.

THE RELATION OF ECONOMIC RESEARCH WORK TO OTHER RESEARCH IN THE STATE[1]

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It is admittedly presumptuous for one of the younger directors of state agricultural experiment stations to attempt in a brief paper to answer the questions which are bound to arise from any consideration of the problem implied in the title of this paper. I have no apology to offer other than that I should never have undertaken the task before me had I not been asked by your officers to do so.

No one can overlook the rapidity with which economics is assuming a prominent place in agricultural research, nor can one fail to note an increasing tendency on the part of researchers in other fields to stress the economic angles and bearings of their respective projects. There is justification, therefore, for considering the relation of economic research to other research in a state, if for no other reason than to stimulate constructive thought on this point; for there can be no doubt that a full and proper relationship should be established and maintained.

The Economist a Newcomer

Economics had no officially recognized position in organized agricultural research until a few years ago. In other words, the agricultural economist, one of the most recent additions to the ever-growing staffs of agricultural research agencies, finds himself with no prior rights such as those held by the chemist; and he can claim none of the traditional background shared by the botanist, horticulturist, or entomologist. A youngster in the field, he may still be regarded by some of his elders as having much to learn. This is not unusual. Every other researcher in the field of agricultural science has had to travel the same road. It is scarcely more than a hundred years since Boussingault, Liebig, Lawes, and others began their epochal studies which demonstrated the practicability and importance of applying science to agriculture; and during that century the world has witnessed the conception, birth, and development of our agricultural research machinery.

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[1] Paper read at Annual Meeting of Western Farm Economics Association, Moscow, Idaho, and Pullman, Washington, June 9-12, 1931.

Economic Research Readily Accepted

The acceptance of agricultural economics as a legitimate field of research has, in reality, been more rapid than that of almost any other science since the first years of organized agricultural research. I vividly recall that when I first entered federal employment, in the Bureau of Plant Industry in 1910, the U. S. Department of Agriculture supported no economic research, except what may have been included in crop reporting and in a struggling Office of Farm Management. Then an Office of Markets was created, and this later was expanded to include Rural Organization. At that time, the chief concern of the new office seemed to center around efforts to organize the southwestern growers of long-staple cotton. Marketing, I gathered, meant the careful handling of bales of Egyptian cotton so as to get them from Arizona to Manchester, England, in a commercially attractive form. At about that time Congress, spurred on by a Secretary of Agriculture with an economic bent, began to appropriate money for economic research; and before long the new office had a building of its own, and the title of Bureau was bestowed upon it. This bureau still occupies the Bieber Building, but it has overrun it and is scattered all over southwest Washington. A proportionate growth is to be seen in the department of agricultural economics in nearly every state college and experiment station.

Economic Problems Not New

The recent advent of agricultural economics into the field of research cannot be taken to mean that all of the difficulties it is seeking to relieve are of recent origin. Many of them have long affected agriculture but until recently they were seen, if at all, only through the eyes of men trained in the older sciences. Just as questions of soil fertility and plant nutrition existed for thousands of years before the arrival of Boussingault, Liebig, and Lawes; just as animal diseases took their annual toll through century after century before such researchers as Smith and Dorsett pointed the way to exterminate them; so, too, economic ills of agriculture existed long before economists were assembled and organized to attack them. True, in recent years, the ills of agriculture taken as a whole seem to have become more numerous, more pronounced, and more complex; but there is room for reasonable doubt as to whether this seeming complexity is real

or merely the result of man's increasing ability to diagnose these ills.

Agriculture has been quick to adopt and utilize discoveries made in the physical and biological sciences, and it will be equally receptive to the findings of economic science. But the economist will contribute most if he strives always to discover and clarify economic laws which can be brought into position alongside of and in harmony with the physical and biological laws upon which agriculture is founded.

Only One Challenging Problem

For, after all, the really great problem challenging agricultural research agencies is the baffling farm problem, embodying at the same time physical, biological, economic, and social relationships. Each scientist may attack this problem from the angle of his peculiar training and experience; but each will fall short of making his greatest contribution, if he fails to realize that there are other angles than his own and that all research, directed from whatever angle, must be coordinated if a solution to the problem is to be found.

In advancing this viewpoint, I am not losing sight of the importance of research in pure science and of the tremendous value to agriculture of some facts which have been discovered by researchers in fields ever so remotely related to the farm problem. Such researches should always be encouraged. There are always a few qualified and interested persons who would choose to work in no other way, and the contributions from their kind are too numerous and too valuable to be overlooked.

Farmers Want Results

But while some provision should be made in every research program for work not likely to have any immediate bearing on the great problem constantly confronting agricultural research agencies, especially the smaller state agencies like the one I represent, the fact remains that the citizens who are expecting to be benefited by agricultural research are not concerned much with anything other than results. They do not worry about the internal troubles of an organization supported for the purpose of getting results. They are not concerned with the division of labor within the organization. They do not care whether the results they can use come from the chemist's test-tubes or the economist's charts, neither are they losing sleep about who gets

the credit for whatever useful results may be coming from the organization they support. They are paying for a service, and they expect, and have a right to expect, results. They are surprisingly tolerant with delays they cannot understand; their patience with the plodding pace of the researcher is astounding; and their trust in trained minds is the world's greatest tribute to science. But in the end, the public research agency is expected to justify its support by contributing to a solution of the farm problem. Contributions have been, and are being, made—enough, I believe, to justify the support these agencies have enjoyed. My point is, not that these agencies still have to justify their existence, but that by fully coordinated effort they can come nearer than by any other means to a fulfillment of their purpose.

Regional Research Programs Desirable

For this reason, I regard favorably the plan advanced by Congressman Victor Christgau providing for regional research programs. For the same reason, I feel that the districting of a state according to type of farming is a good thing. I hope that this general scheme of organization may be realized. But at the same time I hope that it will be supported, not by economists only, but by everybody interested in agricultural research of whatever nature. It would supply a much-needed approach to the farm problem for workers in every line of investigation.

Against the foregoing background of generalities I propose now to project more specifically one man's opinion on the relation of economic research to other research in the state.

Develop a Common Viewpoint

In the first place I feel that all research agencies within a state should develop a common viewpoint with respect to the major agricultural areas of the state and the type of farming characterizing each area. The number of agencies within a state may be large or small, but in any event they should be talking a common language. The results of a type of farming study, it is plain, would lose a great deal of their value if they could not readily be accepted by other interested agencies and especially by all departments within the agency conducting the study.

In Utah, as a forerunner of and an accompaniment to a proposed type of farming study, all agencies other than the state experiment station, and all departments within the station, are being brought to see that the study is of as much concern to them

as to anybody else. It is not a study for the department of agricultural economics to play with. The department of agricultural economics would conduct the study for the benefit of agriculture and every other agency interested in the welfare of agriculture, and every department that has anything to contribute is being afforded an opportunity to have its contributions incorporated in the general plan of procedure. Clearly, the time for consultation, conference, criticism, and suggestion is before, not after, such a study has been made.

An Example of Cooperative Research

My conception of the relationship of economic to other research is clearly illustrated, I believe, by the organization and progress of a cooperative project outlined three years ago at the Utah Experiment Station. Originally the proposed study was outlined as one to be conducted by a single department, the department of irrigation and drainage engineering. The object of the study was to determine and weigh the factors influencing the financial status of two small irrigation projects, each clearly representative of a particular type of irrigation enterprise, and each in financial straits.

Such a study, in a state where agriculture is almost wholly dependent upon irrigation, is one to invite serious attention, and, as director, I was glad to see the proposed study undertaken, but not as one to be carried on by a single department. That the study was conceived by an irrigation and drainage engineer was logical enough, since he had been called upon, time and again, to help the settlers in those projects. They were heavily involved financially, litigation had sapped their savings, bonding houses were calling for payments past due, and tax collectors and mortgage holders were becoming desperate. It was to have been expected, therefore, that the engineer should be perturbed and wondering what influences were at work to break down the promise of success on these projects. But simply because he had sensed the presence of these unseen influences and because he had proposed to seek them out and correct them, commendable as his thinking has been, could his single-handed attack on the situation have been justified administratively? Or did his sensing of a need more logically call for a cooperative attack in which the different training of other minds would be brought to his assistance?

After a number of conferences it was agreed that the pro-

posed study should be made cooperatively by four departments of the station. A lump sum would be provided on the basis of an accepted outline of procedure, and the expenditure of this fund would be in accordance with the joint recommendations of the departments involved.

By mutual agreement, the engineer planned to confine his efforts to the engineering aspects of the cooperative study. The soil aspects would be studied by the man in charge of soil investigations, and the economic aspects by the agricultural economist. The fourth party to the group was the sociologist whose primary interest lay in knowing the people on the projects, whence they came, why they came, and their present social difficulties.

Through the three years that this study has been in progress —and it will be completed soon—the engineer has found as much as he could attend to in the strictly engineering aspects of water-supply and distribution, the soils man has clarified a direct relationship of soil type to water requirement. This soil and water relationship, moreover, has helped the economist to understand wide differences in farm expense and labor income.

While these three departments by mutual agreement of all concerned have been concentrating on these respective assignments the sociologist has been making his preliminary observations and is ready now to make his advance upon the human factor. This year by coordinating all their efforts the study probably will be brought to a satisfactory stage of completion.

In the meantime certain supplementary work has been done by other departments. The irrigation projects being studied are heavy producers of alfalfa seed. Seed-growing is so prominent as to make the agriculture of the region largely dependent upon this single crop. Good years have followed bad, and the seasons of plenty have been frequent enough to sustain hope even in the face of disastrous years.

One-crop farming is not advocated in Utah any more than in other states. But the farmers who practice it are neither to be abandoned nor condemned. Their investments are at stake, and they have their obligations to meet. Obviously, also, they cannot change overnight to a diversified agriculture even if advisable; especially under the circumstances which I have already described as influencing success on the land these farmers occupy. Finally, too, alfalfa seed is peculiarly adapted to that region and probably always will be an important cash crop, even in a

more diversified agriculture. Diversification, moreover, may not prevent "stripping," and stripping is the chief cause of short crops of seed. But what is stripping? What causes it? What is the relationship to stripping of insects, soil, water, humidity, farm practice, and so on? It has been upon these angles of the situation that our supplementary attacks have been directed, with promising effect.

As a means of clarifying our objectives, all cooperating units united last winter in making a joint report of progress in which the outstanding aspects of the situation were defined and all pertinent facts analyzed. This report is not for publication; it is a kind of trial balance, a checking up, before the next attack.

But how, you may ask, have the settlers benefited in the meantime? Briefly, they have been kept advised of progress by personal contacts and public meetings. The county agricultural agent has been in touch with developments, and the station staff workers have cooperated with the extension service specialists in disseminating information available for release.

I have cited this cooperative study not by way of setting it up as ideal, but merely as illustrative of what we regard as effective cooperation in research and the relationship of economics to other fields of research.

Whether such cooperation would be practicable in other studies, I do not know. Obviously it is not needed in some project work. But it is serving as a pattern, at least, and we are applying it as we go along whenever circumstances seem to warrant.

The Greatest Obstacle to Cooperative Research

The greatest obstacle in the way of effecting satisfactory cooperative projects in which the economist plays a part is fear or misgiving among the older departments. This has been encountered by economists in the formulation of their own projects, especially with respect to commodity studies. I believe it is less of an obstacle now than it was five years ago. I believe it will disappear ultimately, as it should. But one of the surest ways to put it definitely out of the way is to make plain to all concerned the purpose and probable benefits of such a study. This calls for concessions on the part of the economist as well as on the part of other researchers. The economist in undertaking a commodity study, for example, makes a mistake if he assumes the rôle of a specialist with respect to that commodity, whether it be wheat, apples, poultry, prunes, or potatoes. He should, instead,

make it perfectly plain to all concerned that he proposes merely to measure the status of that commodity by an economic measuring stick, as a means of showing it to growers, dealers, consumers, and the research department primarily concerned with the difficulties of the commodity under observation. By this study the economist may find that the more important aspects of a commodity situation are essentially production in character, to which the department most immediately concerned could devote its efforts with renewed interest. Or, difficulties of distribution may be emphasized and further efforts could best be made jointly by the two departments. Again, the situation might be strictly economic, or of a mixed character demanding attention from various other angles. In any event the production department could well afford to welcome the economist as he and his department stand to benefit by whatever the economist finds to be true with respect to the commodity studied.

Overcoming Distrust

A primary cause of fear or misgiving on the part of the production department approached by the economist is lack of confidence in the economist's knowledge of the commodity he proposes to study or, what amounts to the same thing, doubt as to the value of the results to be recorded by the economist. As a rule the older departments are headed by men who for years have held full sway in all matters pertaining to the commodity they claim as falling wholly within their province. Hence, they are disposed reluctantly to share any responsibility with the newcomer. What, they ask, does the economist know about squash, for example? What right, they demand, has he to meddle in this field? All he can learn about the squash industry, they think, will be of little value to the growers, anyway; and besides, if there is more to be learned about squash than this department already knows, the acquisition of further knowledge in this field is claimed exclusively as the responsibility of this department. Let the economist stick to his last, they proclaim, as there are enough problems for the economist without his delving into the affairs of every other department on the campus! Such an attitude, while natural enough, is one that is soon destroyed by effective work on the part of the economist. Granting the production department's greater knowledge of the industry as at present understood, the economist, if he is wise, will stick to his last—he will utilize all available information in order the

more intelligently to apply his economic measuring stick. He will, moreover, keep his economic glasses on while assembling, analyzing, and interpreting his data. He will proceed, in other words, with a belief in his ability to be of service to producers of the commodity under study, realizing the while that his is but another approach to the ills besetting that commodity.

It is apparent, of course, that there is reason for each of the older departments sticking to their respective lasts, also. For it is as much to be expected that the economist knows his squash as that the squash department knows its economics. The important thing to keep in mind always is that there is room for all parties to work, if a coordinated program is set up.

Economics a Proven Field

By stressing in this paper the need of common viewpoints, mutual understanding, and effective interdepartmental cooperation, I may have given the impression that, as economics takes its rightful place in organized agricultural research, it will become more and more a service department; that it will be primarily concerned with the task of showing other departments the economic ills of different commodities and of indicating how these ills may be cured. If I have left such an impression it has been unintentional. I am not presuming to say what should be or will be the ultimate place of economics in agricultural research. But even if the department of agricultural economics should find itself in the rôle of a service department, it would need to have no fear as to its usefulness. It has already proved that it has a function, that it can help to clarify the great farm problem and contribute substantially toward a solution of it.

Summary

So, in conclusion, I should say that the relation of economic research to other research in the state is exactly the same relation as that of any other science. It is an accepted part of the organized forces that have been marshaled for the benefit of agriculture. From these forces agriculture expects results. The economist, working in close harmony with all other researchers in the common cause, can help to get results that agriculture can use with profit and satisfaction.

THE FEUDAL SYSTEM IN PERSIA

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Before the lands of Europe were populated the "khans" or lords of Persia were ruling their "ryats" or serfs with an iron hand. Since that time the lands of Europe have been settled, have groaned under a feudal system more exacting than ever prevailed in Persia, have been divided into nations, have witnessed the overthrow of the feudal system, tried private ownership and capitalism in all its forms, and are now experimenting with socialism and communism. Yet, in Persia the feudal system still holds its own; though in these days the signs of change are more than a ripple on the calm surface of this inland empire from which many movements of peoples and ideas have issued forth while few have broken in upon her.

Invaders, Greeks, Turks, Arabs, and Mongols, satisfied with plundering the land, passed on to richer fields and left the feudal system as they found it. Changing dynasties have done the same, replacing disloyal lords by those who helped to effect the change, yet leaving unmolested the humble villager, that human beast of burden whose sole ambition seems to have been to tread the path that his fathers have trod before him.

Feudalism as it is Today

It is impossible to give an exact description of the feudal system as it prevails today because of the endless confusion of custom and practice. That which follows is an attempt to give only an approximate statement of general practice. It must be borne in mind that there are many exceptions both above and below the average as herein set forth.

As organized today, a typical village is built on a piece of land about four miles square, larger or smaller according to locality. The land, together with all water courses, houses, trees and other fixed improvements belongs to the landlord who in many cases lives in what was at one time an elaborate, mud-walled fort under whose protection the village has been developed. In former times these forts were a necessary protection against the raids of wandering tribes and other enemy villagers, but today when a strong central government is disarming the people these mud walls are fast falling into ruins.

In case the 100 to 200 families that form an average village and cultivate the ground are not as many as the village can accommodate, the owner may encourage migration to his village by constructing additional houses and reducing the taxes and fees that are collected. However, such assistance is rarely offered. The common practice is to grant building privileges alone, usually about six hundred square meters of land for each family. Upon this ground the villager may build his house which reverts to the landlord in case the farmer is ousted or chooses to leave it. The size of the yard is limited not so much by the landlord as by the villagers themselves who prefer to till the soil and reap saleable crops rather than retain it as unprofitable yard space.

By special arrangement with the landlord private rights in orchards, vineyards, general transportation business, small "dokkans" or shops, and flour mills—the old water-mill type—may be arranged. Sometimes these may be operated on shares for the owner, but more commonly a fixed sum is collected for the privilege. Orchards and vineyards will pay an annual tax of from 50 cents to $5 per "jarib" or 1000 square meters; a rental or privilege tax of from $20 to $50 will be collected from flour mills and general repair shops, while butcher shops and other small "dokkans" will pay from $10 to $25 per year, necessary repairs of the most meager type being met from this amount. Timber rights along irrigation ditches and in swampy, untillable places are usually granted to one or more villagers who plant willow, poplar, and other varieties of trees, care for them, and finally market the wood and timber, turning over one-third of the total receipts to the landlord.

In addition to these sources of revenue there are the livestock taxes. Donkeys and oxen which are used for the general work of the village are sometimes exempt, though usually an annual tax of from 10 cents to $1 apiece is collected. Animals that are used for caravan routes and for private gain are subject to a somewhat higher tax. Usually in addition to the regular tax for each yoke of oxen, eggs, butter, and a couple of chickens must be presented to the landlord, thus insuring a generous food supply whenever he visits the village. Sheep and goats are subject to a tax of from 10 to 50 cents apiece, which is the landlord's profit from the general grazing lands of the village. From these different sources, with proper care and cultivation, collecting all that can be collected and yet not discouraging the villagers or

driving them away, an annual income of from one thousand to ten thousand dollars may be obtained.

Land Rights

From time to time the land of a village is portioned off among the different villagers. With a "tanab," a marked rope ten meters long, all the land of the village is divided into regular rectangular plots usually containing about 3600 square meters—one tanab —usually about 36 x 100 meters in size. These are then portioned out to the different heads of families, a fair portion of good land along with a similar portion of the bad going to each villager, so that his holdings are in two or more places over the estate, the amount depending upon the number of oxen that each family may have. When this division has once been made and proper markers set up or defined, an irrigation ditch, a tree, a stone, a road, or a pile of dirt, each villager affixes his seal to the agreement which is then deposited with the landlord for safekeeping.

In addition to these apportioned lands a perpetual right to other undeveloped plots may be gained by clearing away the stones, making terraces, or other such improvements.

After the land has been divided each man is supposed to cultivate his own particular plots. The principal crops are wheat and barley, with some attention paid to rice, cotton, alfalfa, melons, vegetables, opium, tobacco, and orchards. The well-nigh universal practice in dividing the produce obtained from irrigated land is that one-third goes to the landlord and the other two-thirds to the villager. The crops from non-irrigated lands, "dame," are divided on a basis of one to four. These are the sandy hillsides far away from the village; crops are more uncertain, entail more labor for the final return, and under a system of dry farming produce a crop only once in two or three years.

One of the most serious problems that arise after a division of the land is that which comes from the old, old fact that an equitable division does not remain so. Misfortune seems to be the lot of some people in Persia as well as in other lands. Oxen may die when there is no way of replacing them, the head of the family may pass away leaving no son, or from the beginning the land may have been allotted to an irresponsible family. In such cases the most desirable plots which were the part of the unfortunate family may be sublet to some more fortunate whose

oxen have increased or whose sons may have come of age. Such a temporary arrangement helps to provide for the unfortunate family, but this is done at the expense of both the landlord and the villager who tills the soil. Since the produce from such plots must be divided into three shares the man who actually does the work gives less attention to this plot than he would if he were to receive the regular two-thirds. Frequently such lands are made over to the "mullah" or priest of the village. This is considered as a very worthy act on the part of the unfortunate family and indirectly it is to the interest of the landlord, since religion as a kind of second landlord strengthens his own position. Finally, however, when many such holdings are left idle and other families are demanding more land, a new division is ordered and the land is portioned out among the villagers according to their ability to cultivate it.

Over-population

Though Persia is bothered with no immigration problem we should expect the natural increase in population to result in a general overcrowding of the villages. However, infant mortality and unsanitary conditions keep the population fairly stationary and as yet, even after more than 3000 years of the feudal system, there seems to be but little evidence of overcrowding. Whenever such over-crowding does occur or when misfortune or the tyranny of a landlord causes a loss of rights to cultivate the land, villagers may join themselves to another village and hope for better treatment. Frequently in order to better his condition a villager will change his location without the consent of his former landlord. This has to be done secretly, preferably at night, in order that flocks and household goods may not be confiscated. However, when once he has reached another village and put himself under the protection of its landlord it becomes a matter of the prestige and strength of the two lords unless the government steps in and orders peace.

The lack of industrial development in Persia means a scarcity of employment in the cities. Nevertheless, the few large cities stand out and tempt those whose life in the villages has become unbearable. Such persons are soon disillusioned when they find that they are simply another addition to the servant class, or spasmodic workmen in private gardens, street cleaning, or in building operations. Such a task rarely pays more than 30 cents a day and this must cover rent, fuel, food, and clothes. As vil-

lagers these lived in their own houses, raised at least a part of their food, and picked up their fuel at random. Certainly at present there is little reason for villagers to change their lot for that of day-laborers in the city.

Business Management

We should expect a rather complicated system of accounts and a certain degree of efficiency in the management of such a system of accounts, land divisions, and settlement of differences among the villagers. Especially should this be true when the landlord's holdings extend to ten, twenty, or even more than one hundred villages in different parts of the country. However, in this land where the feudal system has been in operation from time immemorial, there seems to be but little effort at organization, red tape, and accounting that requires or even lends itself to any degree of efficiency. An assistant or general business manager together with a "kadkhoda,"[1] or headman, in each village, comprises the administrative machinery for the whole system. From force of habit, together with the leading of the "mullahs," or priests, the villager quite readily sets aside that which belongs to the landlord—to steal from him is no less a sin than to steal from God himself.

Practically the only responsibility that the landlord has is to send his representative at harvest time and claim his part of the produce. Since the villagers receive two-thirds of the crop they may be trusted to make the land produce as much as possible. Knowing this, the landlord rarely exerts himself to show his own greater ignorance of agricultural methods.

Perhaps the most important cog in the machine is the head man or "kadkhoda" of the village. The landlord does well to choose as head man one who is not only loyal to him but one who is also liked by his fellow-villagers. He has his own particular plots to cultivate and in addition must keep all the other villagers working harmoniously together. He directs all community operations such as cleaning irrigation ditches and water courses and especially must he make regular reports to the landlord. His house is usually headquarters for the landlord and his representative, government officials, and passing guests. For this reason he may receive special assistance in furnishing a guest

[1] "Kadkhoda" in ancient Persian means lord of trouble; "kand-khoda" of Turkish derivation means lord of the village. There is considerable difference of opinion as to which of these two words is correct.

room. In return for his services he receives about $50 a year, usually in grants of wheat and barley, together with a small amount of cash. His tenure of office depends absolutely upon the will of the landlord or his assistant, as in the end does the fate of each and every tenant in the village.

Civil Powers of the Landlord

The landlord, as sole owner, may exclude from his land any one who arouses his displeasure or may fix any punishment which must be accepted as final. In former times and even still his power is practically unlimited. All disputes and their proper penalties may be settled without recourse to the law courts of the country. Most villages have no jail, court, or police, the outward signs of law and order. The simple villager needs nothing more than an occasional visit of the landlord to help him maintain satisfactory working relations with his neighbor. Whenever a misdemeanor is committed, and they are indeed few in number, the guilty persons may be sentenced to repair a bridge, clean water courses, or pay a fine to those whom he has injured. In order to keep free of imprisonment and to avoid the entanglements, delays, and expense of the general law courts of the country, the villager is usually glad to accept the punishment as ordered by the landlord or "kadkhoda."

Such power with no hope of redress against it naturally leads to many abuses, the worst of which is to drive a villager from his land just before harvest time. This results in not only depriving him of the house that he may have built but also in confiscating his crops, and what government official is there who would listen to a poor villager after receiving a horse or a couple of fine rugs from his landlord? Such power as this, together with the knowledge that he is cultivating another man's ground and that his very house can be taken from him, keeps the villager—naturally a docile creature—in a virtual state of servitude. He is being continually reminded that he has no rights in the land and whatever initiative he may show is soon smothered out by a system that demands above all things a servile submission to the landlord's orders. The slight tax that is levied on livestock and gardens discourages most ventures along this line. For this reason we find the average villager a one-crop farmer, slow to venture into untried paths. Generation after generation has eked out a meager existence by planting grain and fertilizing

the soil as well as irrigating its crops by turning in the muddy water from the mountain streams.

In time of need or when grain is selling at a premium the villager is tempted to sell his seed or to eat it and then depend upon his landlord to supply the necessary seed. To replace it with cheaper grain the following year might mean a considerable gain to the villager. To curb such tendencies a landlord must be ever on the alert and at times it seems that he must be high-handed or else surrender his rights to the villagers.

The Villagers' Surplus

Perchance the villager has been fortunate and accumulated a small surplus of a few hundred dollars. This he finds difficult to invest. There are no stocks and bonds to worry him, no savings banks, and no real estate for sale; so his religion comes to the rescue with its demands for a pilgrimage. To the deserts of Arabia or to Khorassan, the farthermost province of his own country, he betakes himself, and, spending his surplus, returns after two or three months to continue the same old routine, but this time as a "haji" whose devotion and experience give him a coveted position of prominence in the village.[2]

In rare cases a thrifty villager will be found who has used his surplus wisely. In spite of the privilege tax he may buy additional flocks and increase in wealth, or he may put his surplus into rug weaving and gradually accumulate a comfortable surplus. Finally when the landlord is in need of cash the villager may come to the rescue and secure a share in the village in exchange for his two or three thousand dollars.

Break-up of Large Estates

In recent years, because of decreased income from decadent holdings and the increased demands which arise from the growing attractions of the cities, journeys to Paris, the importation of phonographs, motor cars, foreign cloth, etc., there is an insatiable demand for ready cash. Since it is almost impossible to find a purchaser for a $50,000 village the landlord must look to small capitalists for relief. So, year by year, little by little, a village is sold to a number of small owners, some within the village itself, others in nearby towns.

At first this might seem to be a hopeful sign, yet in actual

[2] A conservative estimate is that at least one-fifth of the heads of families make at least one pilgrimage.

practice we find that those who have counted their gains in pennies are more tyrannical than those who have counted only the dollars. We also find that instead of a unified policy for the development of the village the villagers as well as the village itself are now divided into groups, often with diverse interests. The common water systems, roads, and general improvements are largely neglected. When one owner is ready to make improvements the others hold back. One owner favors one type of improvement while another favors something else. Such being the results, no one seems to benefit from the break-up of large estates today.

Present Tendencies

Through the vicissitudes of time the great holdings have been put on the market and by sale and purchase the price of each village is now fairly well established. Whether the large holdings are actually broken up or not they are now held primarily as good investments and the feudal system is called upon to produce dividends when weighed in the balance of modern capitalism.

Government taxes on crops, animals, and general income must be paid by the landlord, cost of administration must be met, a fair interest rate must be returned on the value of the investment, and a generous profit, the more the better, must be turned over to the landlord, or else a village is a losing investment. In order to meet these demands the landlord must squeeze the village for all that it is worth and reinvest only that which will produce immediate results.

It is far easier for any government, and especially for an inefficient government, to hold the landlord responsible for taxes and military service than to exact them directly from every villager. In the past, such has been the case in Persia. However, the present government is strongly centralized and history shows us that the development of a strong central government means the disappearance of the feudal lord. Today the divisions of the national army stationed in different parts of the country, together with the road guards and military police, guarantee an internal security that has probably never been surpassed in Persia. Thus passes the power and responsibility of the village owner who with his own armed guards could turn his attention to peaceful protection or to pillage as best suited his own individual needs.

In like manner compulsory service, preventative health meas-

ures like smallpox vaccination, and the small beginnings of village schools help to awaken the villager to the fact that there is a power even greater than that of the landlord. Then too, there are the law courts which are ready to hear cases not only of villager against villager and landlord against village but, theoretically at least, even that of villager against landlord. "I shall appeal to the courts," is a growing retort to the high-handed injustice of landlords.

Under a new law the government now compels the regular registration of all houses, villages, and lands. It is persistently rumored that the government will soon deal a death blow to the feudal system by making it possible to register village houses and yards in the name of the man who has occupied them for more than twenty years.

With the break-up of larger holdings, the increased power of the central government, the growth of an independent spirit among the villagers, and the unrest in neighboring countries like Russia, India, and China, what hope can there be for the continued existence of the feudal system as it is in Persia? It is no wonder that improvements are not being made; only the most necessary repairs are being authorized on houses and water courses; only those expenditures which promise immediate returns are being made today.

This system which has withstood so successfully the changes of the past ages now faces the modern age of self-determination. Already we see the quiet content of the simple villager giving way to rebellious discontent and the personal oversight of beneficent landlords giving way to the impersonal demands of absentee owners.

Let us hope that the leaders and students of the new Persia may be able to profit from the experiences of other nations and so lessen somewhat the bitterness of the struggle and the suffering that are sure to accompany the birthpains of a new age.

NOTES

APPLICATION OF THE MARGINAL PRINCIPLES IN ANALYZING THE FARM BUSINESS

The leader of the Danish bureau which receives and analyzes 700 farm accounts is inconvenienced by the fact that the accounts seem to show poor rentability for fodder beets while the farmers still raise very many of these beets, especially for cows. He offers several good explanations of this, such as that the work and manure given to the beet crop also benefit the crops of the following year; but one good explanation he omits, namely that the accounts compare the average output in place of the marginal output from this crop. In terms of *rotation* problems, this marginal analysis would apply as follows: If in a 6-year rotation with three fields in grain, two in grass and one in beets, grain returns, for instance, 20 units per hectare, and beets 16 (plus covering for extra costs), the latter seems to be inferior. But if the farmer had four fields with grain, their average return to the farm business might sink to, say, 18 units; this would mean that the fourth field of grain brought an additional return of only 12 (72 minus 60). Accordingly one field in beets would pay better than a fourth field in grain.

The application to fertilizers would be along the following lines: When the advisers of the farmers try to explain in a popular way the effect of artificial fertilizers, they sometimes say, "A sack gives an (additional) crop of so and so much per hectare." This, however, is too simple an explanation. It should not be impossible to explain to the farmers that the first sack gives so much, the second somewhat less, the third still less, etc. With this sort of an explanation, the farmers would stop at the last sack whose effect has greater value than the cost of a sack. However, this point of intersection varies according to prices and other things. If the sacks add 10, 9, 8, 7 units, etc., and the value of a unit is 1 Kr., then 4 sacks will pay if the price per sack is 6.5 Kr., but 5 sacks if the price is 5.5 Kr. Furthermore, the marginal sack depends on the existing fertility of the soil, and on the quantity of fertilizers of other kinds used; more of one kind gives a better base for more of other kinds.

The margin also depends on the quantity of farm manures used. The proper value of this manure has been much discussed. When is the farmer interested in knowing this value? For instance, when he reflects upon whether he shall have 15 or 18 cows, the additional manure is a part of the income of these cows. The question then is, what value the manure of 3 cows has as addition to the manure of 15 cows. In Denmark, farm manure has less marginal value for the smaller farmers than for the greater, because the first have proportionally much more livestock.

While artificial fertilizers work so fast that it often is permissible to place the whole cost to the debit of the crop of the first year, manure has a slower effect (and we cannot obtain the composition of plant foods we want with it). It is the principle of our accounting bureau to *apportion the cost between the following crops* according to their content of the three most important kinds of plant foods (nitrogen, phosphate, and potash). This overlooks the fact that the manure not only is a direct source of food for the crop, but also makes possible a better utilization of other growth factors, for instance, those coming from the sun and air. If for one kind of plant, only small quantities of a certain plant food are wanted, but this is necessary, then an addition of that food may cause a better utilization of great quantities of other foods. We will here remember the discussion as to railroad freight rates, whether to charge them according to cost or value; and that the classification of different kinds of goods

according to "what the traffic will bear" takes the money where the value is created, not according to cost.

The same analysis can be worked out in terms of *the marginal cow.* As we in agriculture always have joint production, it is difficult to calculate exactly what income and expense attaches to each part or section of the whole farm business. Fortunately, however, this is not necessary; what we want to know is the total net income, and whether this is improved when we augment the number of cows (say) from 15 to 18. To determine this, it is necessary to set up a complete *budget* for the farm with 18 cows in place of 15. This means a number of alterations; for instance, less income from wheat and sugar if more area is wanted in fodder-beets and grass; more wages for the tilling of beets and milking of cows, etc., greater income from butter; more skim milk and therefore more swine; more manure and therefore less cost for fertilizers, etc. Using this budget method we do not ask what the cows give, but what the total result is. This is a much better procedure than the "section" method under which one tries to keep accounts for the cows separately, for the wheat separately, etc., since this separation offers so many insurmountable difficulties, for instance, that mentioned above of the right apportioning of the cost of fertilizers to the different crops. With the budget method, it is sufficient to know the total effect. This method is also better than the "type" method, under which the accounts are classified in groups (for instance, those with great or small intensity, those with many or few cows, etc.), and we observe which group gives the best total result.

Furthermore, we can ask: If 18 cows is the best, what then is the cause? Why is cow No. 19 less profitable than No. 18? This question I cannot analyze here.

Next we can ask the question whether the determination of the *right quantity of feed* for the single animal gets aid from the marginal productivity theory. Have the units of feed decreasing effect like the fertilizers, in such a way that at one price a certain unit has the right marginal value, while at a lower price a later unit is the right one? Some of the professors and advisers of the Danish farmers claim that the right quantity of feed is independent of prices, and that prices should influence only the number of animals.

Similarly, can the principle be applied to the rations for *swine?* Under present conditions, 1 kg. of grain gives about 0.2 kg. living weight. But in the eighties of last century, when the price of bacon was low in relation to the prices of grain, while the farmers had great quantities of skim milk to utilize, the effect of additional grain was probably higher, say 0.3 kg. living weight. The marginal utility of such small quantities of grain was high, as it occasioned a better utilization of the milk; but nevertheless, on account of the high prices of grain, it was necessary to economize in the use of it—the prices compelled the farmer to adjust the rate of feeding of grain in such a way that the effect balanced with the prices.

At that time the quantity of skim milk determined the minimum number of swine; now the price relation often is so favorable that the skim milk sets a maximum. And perhaps in the future the relation will be still more favorable and therefore produce so one-sided a grain ration for swine that 1 kg. will add less than 0.2 kg., but nevertheless still be profitable.

The total value of *different kinds of feed* (grain, grass, hay, straw, beets, etc.) is often expressed in calories. In the Scandinavian countries, a special unit is used which recognizes that protein is expensive per calorie and therefore is used in rather small quantities, and accordingly has a greater marginal utility than corresponds to the content in calories. The large effect of protein is just due to the circumstance that less is fed than would be if the price was the same as for other calories. If protein

and other foods cost the same per calorie we would strive for greatest production per calorie of all foods combined; but because of the higher prices of protein our output per calorie of input is always somewhat less than this. If we fed still more protein, we would come nearer to the point of highest average.

These units of the Scandinavian system are not as unstable as money-units; but if great changes take place in the prices of different kinds of feed, they must be adjusted for this. So also they must be adjusted to the price-conditions of the different countries, while the calorie-system can be the same everywhere and at all times. But the Scandinavian system also has several advantages. For example, when the quantity of milk per cow is related to the quantity of feed, it is proper to regard calories in protein form as better than other calories. It is easy to get a fine figure for milk per calorie of feed if the feed is composed of the more expensive kinds of calories.

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A FIVE-YEAR ECONOMIC STUDY IN THE DRY FARMING AREA

A five-year economic study covering the dry-farming area of eastern New Mexico has recently been completed and the results published in a series of three bulletins by the New Mexico Experiment Station. Climatic conditions during the five years that the study was made are fairly representative of conditions in this area, and it is believed that the basic data secured will be usable as a foundation for farm organization extension work and also as background material for more detailed studies for many years to come.

Three different methods of analysis were used in presenting the data in the three bulletins. In Bulletin 186 the farm management type of survey analysis was used, combined with an historical study of the 125 farmers from whom records were secured. Since many of the farms were homesteaded, this historical study was carried back to the time that farming began in the region. Bulletin 187 in contrast with the foregoing contains an analysis in terms of physical inputs and costs according to definite methods of production, and the results are presented in tabular form so that they can be adjusted for changing conditions. These tables were prepared to help farmers select and proportion the enterprises for their farms when taking into consideration the size of the business that could be handled for the different combinations with the available resources.

In Bulletin 188, the last bulletin of the series, the budget analysis was used. This method was used for the purpose of drawing some general conclusions for the area, but more particularly as a means by which to use the data with changing conditions and varying conditions from farm to farm.

Because of the varied conditions regarding soil, climate, and the resources of the farmers found in this area, and because of changing prices, very few general conclusions can be drawn that are applicable, without some modification, to a large proportion of the farms. Each farm has its individual problems, and it is believed that the greatest value of the study is in the data that can be applied to each farm, although a few of the general conclusions drawn from the study may be of interest.

The field records of the study were secured from 125 farms for the five crops years, 1924 to 1928. The average yields for this period were: wheat, 8.2 bushels; corn, 16.2 bushels; grain sorghums, 17.4 bushels; Sudan seed, 350 pounds; broomcorn, 0.122 tons; and cotton, 49 pounds lint. The average production per cow was 160 pounds butterfat and the average production per hen was 85 eggs, although it was assumed that with

somewhat better feeding methods 180 pounds butterfat and 8 dozen eggs were easily obtainable.

The tractor and large implements have almost entirely displaced horse labor and small tools for wheat production, and large-scale methods are now being introduced for row-crop farming. The study shows that large-scale methods usually materially reduce the production costs per acre and per unit of product. There are other advantages of large-scale methods, however, that may be of more importance than the reduced production costs. They have the advantage of getting the work done when moisture conditions are right, and they make it possible for one man to handle a larger acreage. These advantages are the means of materially increasing the income from the farm.

With the methods used, about six times as much man labor was used to produce an acre of grain sorghum as an acre of wheat. With tractors, one-way disc plows and combines only 1.4 hours of man labor was used to produce and harvest an acre of wheat, and even though the work is usually done during a period of about four months, one

TABLE 1.—RETURNS FROM DIFFERENT SYSTEMS OF FARMING[1]

Systems of farming	A Series Land limited to 480 acres		B Series Labor limited to 1½ men	
	1924–28 prices	1930 prices	1924–28 prices	1930 prices
1. Specialized wheat	$1814	$323	$2686	$318
2. Wheat, dairy, poultry	2018	837	2495	845
3. Wheat, grain sorhgum	1498	582	1712	489
4. Wheat, grain sorghum, dairy, poultry	1636	740	1778	727
5. Specialized grain sorghum	1287	777	936	651
6. Grain sorghum, broomcorn	1411	722	1098	707
7. Grain sorghum, dairy, poultry	1536	986	1162	862

[1] Average prices for the two periods were:

	1924-28 average	*1930 average*
Wheat, per bushel	$ 1.12	$ .66
Grain sorghums, per cwt.	1.12	.88
Broomcorn, per ton	87.00	57.00
Butterfat, per pound	.38	.28
Eggs, per dozen	.25	.20

man should have no difficulty in growing 500 or 600 acres of wheat by employing some extra help at harvesting time, provided moisture conditions are reasonably good, so that it is not necessary to delay the work. About twice as much labor per acre was used on broomcorn as upon grain sorghums. In round figures, one can produce 100 acres of wheat or 20 acres of grain sorghums or 10 acres of broomcorn with about the same number of hours of man-labor as it requires to care for one cow. The distribution of this labor, however, is an important factor in planning the farm organization.

Estimated incomes from seven different systems of farming are shown in Table I and Table II for two different conditions relating to the factor that limits the size of the business and for two different sets of prices in the following table. In the A series it is assumed that the farmer is definitely limited to 480 acres of land. It is also assumed that he is worth $10,000, but that he is able to borrow the additional amounts that are necessary for the different systems of farming. Besides the farmer, a son of school age is available, who is able to do a full man's work from June 1 to September 15, and who can help with the work on Saturdays and before and after school during the school term to the extent of 100 hours a month during the rush season. It is also

assumed that the farmer can hire extra help if it is necessary during the harvesting season. Thus land is the only factor that is definitely limited, the farmer being in a position to borrow more capital and hire more labor if it is needed. In the B series it is assumed that all conditions are the same as in the A series, except that labor is the limited factor and that the farmer is in position to purchase more land providing he and his son can do the necessary work to operate it.

It is quite evident from this table that with average prices, crop yields and production that prevailed during the five years of the study, the largest incomes were secured from wheat farming. This was not because of larger returns per acre, but because of the fact that one man can handle a much larger acreage of wheat than of other crops. Because of less labor required per acre, the advantage of wheat farming was greater when labor was the limiting factor than it was when land was the limiting factor. With average prices that were received during 1930 the situation was somewhat reversed. The specialized wheat farms gave the lowest returns, although the wheat farms where a considerable income was secured from dairy and poultry products

TABLE 2.—ENTERPRISES INCLUDED FOR THE DIFFERENT SYSTEMS

System	Acres in farm	Acres in			Dairy cows	Chickens
		Wheat	Grain sorghums	Broomcorn		
A1	480	432			2	50
A2	480	270	76		10	250
A3	480	178	178		2	50
A4	480	158	140		10	250
A5	480		296		2	50
A6	480		186	110	2	50
A7	480		250		10	250
B1	740	686			2	50
B2	620	406	76		10	250
B3	560	284	150		2	50
B4	480	224	98		10	250
B5	290		170		2	50
B6	300		128	52	2	50
B7	260		108		10	250

ranked near the top. Some broomcorn in the rotation increased the income in all cases, except with 1930 prices when land was limited. In all cases the returns increased when considerable income was secured from dairy and poultry products.

With the 1924-28 prices, the net return per hour of labor for labor and management for wheat was over $2.00 while for grain sorghums and broomcorn it was 36 and 37 cents respectively. With the 1930 prices, the net return per hour for these three crops would be approximately: wheat, 34 cents; grain sorghums, 26 cents; and broomcorn, 15 cents. Much of the labor for grain sorghums and broomcorn, however, comes at a time when it cannot be used on wheat. This advantage more than offset the larger returns per hour for wheat with 1930 prices even when labor was the limiting factor. It was also true that even though broomcorn required considerably more labor per acre than grain sorghums, a combination of grain sorghums with a limited acreage of broomcorn made it possible for one man to handle a larger total acreage because of the earlier harvesting season for broomcorn. This fact made it possible to secure a larger income by including broomcorn when labor was the limited factor even with 1930 prices when broomcorn gave a much larger return per hour of labor.

While dairy and poultry enterprises gave small returns for the labor devoted to the enterprises, the farm income can usually be materially increased by having a considerable income from these enterprises because the labor is well distributed through-

out the year and much of it can be done by women and children or by the farmer himself at times when there is little work to be done in the field. It is largely a question as to the extent to which the farmer and his family are willing to put in the extra effort to secure the additional income. With the 1924-28 prices, the dairy enterprise gave a net return of 19 cents per hour for labor and management, and the poultry enterprise a return of 28 cents. With the 1930 prices the net return per hour is 13 cents for each enterprise.

Because of changes in the price situation, differences in average yields that can be secured on the different farms, and differences in individual resources, it is necessary to modify any general conclusions for different conditions and different farms. Tables are included in the bulletins providing an easy means of making many of these adjustments.

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A METHOD OF DETERMINING CLASSES AND GRADES OF LIVESTOCK MARKETED FROM CERTAIN AREAS

The Joint Committee on Projects and Correlation of Research of the Association of Land Grant Colleges and the United States Department of Agriculture issued a report in 1925, which was revised in 1927, on *National Problems for Cooperation.*

In discussing the marketing of livestock and livestock products the Committee suggested and briefly outlined fourteen lines of research and said that the one of most immediate importance was The Movement of Livestock to Market, which included "classes and grades of livestock moving from various regions at different seasons, and to the various markets." The report further suggested this study for all the states producing livestock. A study of this character seemed to offer opportunities for securing much needed data for North Dakota.

During the succeeding two or three years both the United States Bureau of Agricultural Economics and the Departments of Agricultural Economics in states adjacent to North Dakota were approached with the view of arranging a joint project for the area marketing livestock through the South St. Paul market. On account of various difficulties encountered a regional study did not emerge. The call for accurate information on classes and grades of North Dakota livestock moving to market became more urgent, particularly by extension workers interested in the improvement of breeding and feeding of livestock. A careful preliminary study was made of the data needed, sources of information, and methods of tabulating the necessary data. In 1929 a three to five year study was decided upon to be carried on as a North Dakota state undertaking through the use of Purnell funds.

The chief research problems involved were, (1) getting access to account sales covering cattle shipments to the South St. Paul market; (2) securing sufficient supplementary data to make possible the determination of sub-class and the grade of each animal within the sub-class; (3) securing a satisfactory sample, both as to size and distribution through the various months of the year; and (4) the tabulation and analysis of the data after classification and grading of the animals.

Contacts were made with both private and cooperative livestock selling agencies operating on the South St. Paul market which receive most of the cattle shipped out of North Dakota. The South St. Paul Livestock Exchange, after careful consideration of the data we wished and the use we planned to make thereof, endorsed the plan and commended it to its various members. As a result of this and the friendly attitude of the cooperative sales agencies, all the important ones made available such

records to us as were needed. It may be noted that under Federal rulings livestock commission companies are not permitted to give out sales data relative to individual shipments without the permission of the shipper. This obstacle to securing the data was overcome by not including the names of any shippers in the data secured and tabulating shipments by counties only, not by individual shipping points. Forms prepared for transferring data from the account sales provided for the date of shipment, shipping point, buyer, classes of cattle (steer, heifer, cow, bull, stag), weight, price, sub-class (slaughter, feeder, dairy cow), and grade. With the exception of sub-class and grade, the account sales provided the necessary data. Sub-class and grade, however, were the important ones and the crux of the study. These were determined on the basis of a classification of all buyers with respect to class of livestock purchased and the character of their buying activities, and on the basis of the market reports issued by the United States Bureau of Agricultural Economics on the character of the demand and prices being paid for slaughter and feeder animals. A careful canvass was made among the sellers on the market as to the buying activities of various concerns purchasing cattle. Packer buyers rarely buy anything but slaughter animals, while certain other concerns deal almost entirely in feeder and stocker animals. There are, however, a few speculators that may deal in both feeder and slaughter animals, and the sub-class can be determined only by such supplementary data as weight and price paid, and the character of the market at the time the purchase occurred. After the cattle were placed as to sub-class, they were graded on the basis of the weight and daily price quotations for the South St. Paul market as issued by the United States Bureau of Agricultural Economics for this market. In a similar manner, a small amount of grading of certain classes of cattle has been satisfactorily done by the Bureau of Agricultural Economics for the Chicago market.

The problem of size and distribution of sample was worked out on the county basis. Carlot shipments of cattle as reported by the railroads are available by counties and a tentative goal of a 15 to 20 per cent sample by counties was determined upon as being adequate. This could not be strictly adhered to, since some counties are well supplied with railroad shipping facilities and others are not. In fact, one county has only one shipping point, and that in one corner. For 1929, data were secured on 52,680 animals or 1756 cars, representing 15.2 per cent of the total shipments. Where estimates of carlots were necessary because of mixed shipments, 30 head of cattle were considered a carload. In order to secure as nearly random sampling as possible, all of the North Dakota cattle shipments handled by certain large commission firms on the South St. Paul market were tabulated. This gave a seasonal distribution, although there may be some bias in the data, due to the practice by some farmers of selling the better finished animals to local buyers and shipping lower grades through cooperative livestock shipping associations. An attempt has been made to meet this possible bias by securing shipments from both private and cooperative commission companies.

After securing data and checking up on the size of the sample secured by counties the carload shipments from certain eastern counties were found not to be adequate, and possibly not representative. This condition was due to the presence of two packing plants in eastern North Dakota which receive the bulk of their supply of livestock from nearby counties through trucking. Arrangements were made to secure data from the larger of these packing plants which regularly pays a certain number of cents per hundredweight under the South St. Paul price. This price policy has made possible the classification and grading of cattle on the same basis as the carlot shipments to the South St. Paul market.

The punch card system was used for tabulating and recording the results. A record

of each animal included in the study was placed on a card, the analysis being made by counties where a sample of adequate size has been obtained. In counties where railroad facilities are sparse, grouping will be made on the basis of shipping facilities. When several years' data are available, a study of groupings by counties will be made on the basis of factors that may be influential in determining classes and grades marketed. At present a progress report is being prepared giving the results for 1929. The county data are the backbone of a county agent program in each county for improved breeding and feeding of livestock. The classes and grades of cattle in particular areas can be definitely shown, as well as the prices obtained for these various classes and grades.

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SUMMER MEETING, 1931, OF THE BRITISH AGRICULTURAL ECONOMICS SOCIETY

The summer meeting of the British Agricultural Economics Society was held this year at Downing College, University of Cambridge, on June 26 to 29. About fifty members were present, including two from the United States, Professors Black and Whelpton, who stayed over for it after attending the General Assembly of the International Population Union, which met in London on June 14 to 18. The society now numbers 180 members.

The plan followed at these meetings in England is quite different from that of the American Farm Economics Association. Only one paper is read at a session, and this has been printed and circulated in advance, so that there is usually an abundance of valuable discussion following each paper.

The presidential address was a paper by Prof. D. H. MacGregor of the University of Oxford, bearing the title, "The Adjustment of Agriculture to Industrial Rationalization," which was discussed during two whole sessions. Professor MacGregor's objective in his paper was to put before British agricultural economists the issue as to whether British agriculture is to continue as small independent units or to undergo a process of "capitalistic amalgamation" such as the Labor Government has imposed upon the coal industry and is urging strongly on the cotton industry. "If 1,400 mining units is thought of as too many, what about 300,000 farming units?" He took no positive stand on this question, but rather sought to demonstrate that the burden of proof was on those who argue for continuing the present system. He made distinction, however, between a "unit of production" and a "unit of enterprise," admitting that the factors conventionally mentioned might limit the former to areas little larger than included in present English farms (not small holdings). The organizing and planning, the raising of capital and financial control, and the buying and selling would be in the hands of central office groups if "rationalization" occurred. The reasons advanced in favor of it were "in part the economy of large-scale enterprise, in part the control over prices, in part bargaining strength against other groups or other countries." Professor MacGregor fears that England may "have to face now the possibility of large combinations in foodstuffs for export, and a régime of international arrangements," in which large food importing nations will be at a great disadvantage unless their own food production is under rationalized control. He set over against such a conception the idea of farming as a "mode of life," in which other things weigh more heavily than efficiency in production. The opinion of those discussing the paper was much divided, with Sir Horace Plunkett definitely taking a position in favor of farming in independent units as a mode of life, and J. S. King arguing

that the coal industry and agriculture had too little in common to be considered as parallels; with C. S. Orwin reaffirming the position taken in his *Future of Farming* that no reason of sufficient magnitude stands in the way of agriculture's following the lead of industry; and with A. W. Ashby questioning the "sanctions" advanced, but conceding that rationalization in agriculture might well be on the way. Others present advanced the idea that greater differentiation would probably develop, large-scale enterprises of various types developing in particular lines of production or areas, family units persisting in others, and farming combined with other work developing in others.

Mr. W. G. Coates, a practicing chartered accountant before the War, now a farmer in Central England, reported in a significant paper his unsuccessful attempt to determine, using conventional methods of charging rent, man-labor costs, horse-labor costs, manure costs and machine costs, and six different methods of apportioning indirect expenses, which of the departments of his farm business paid best, and whether or not he should expand or contract his milk business, his pig business, his poultry business, etc. About the only comments were those of J. S. King in which he gracefully acknowledged that Mr. Coates's experience fell in line with his own ideas as expressed in his book on farm accounting.

Mr. Arthur Jones, advisory economist at the Midland Agricultural College, reported on a study which he has just completed of the distribution and consumption of fresh meat in the city of Loughborough, which had 12,935 persons reported in the different occupations in the census of 1921. Data were obtained for one week in each of twelve months from all of the 44 meat distributors in Loughborough; and from about 600 householders for the months of March and August. Those working in the field in the United States will be interested in learning that the per-capita consumption obtained from the distribution records was 1.98 pounds per week, and from the housewives' 1.86 pounds per week, the difference running consistently in the various sub-groups. The typical distributor in the city handled each week one beast, about four sheep, and a pig. The range in consumption by months proved to be small, from 1.95 in the June-to-October period to 2.01 in the December-to-May period. The range by occupational groups was from 1.66 for the "Labouring" group to 2.06 for "Tradesmen" and 2.21 for the "Well-to-do." One-third of the meat consumption of the "Labouring" group was imported and one-tenth of that of the "Well-to-do."

The final paper was a report by Mr. M. A. Abrams of a study of what has become of the 72 children still living who left 14 schools in the Cotswold region at the age of 14 in 1921. The girls have left their native villages more than the boys, to become domestic helpers in cities or shopkeepers in nearby towns. Only 11 of 36 boys have become wage-earners in agriculture; but most of the remainder have found other occupations in their native villages. Only 7 have gone into occupations covered by the National Employment Insurance scheme. Mr. Abrams considers that for this region, agriculture is providing a living for very few of the young people brought up in it; but that other employments in the same area have cared for a considerable part of them. He suggests that similar tendencies may be under way in other areas.

Americans will be interested to know that Sir Horace Plunkett was elected as next year's president of the society.

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SUPPLY AND PRODUCTION, DEMAND AND CONSUMPTION

Some interesting questions in economic theory are raised by changes that have taken place since 1866 in the demand for corn and in the supply of it. These questions illustrate the value of distinguishing clearly between supply and production, and between demand and consumption.

From 1866 to 1920, the numbers of livestock in the United States increased rapidly. If the demand for corn per head of livestock had remained unchanged from 1866 to 1920, this increase in numbers would be represented by a horizontal shift to the right in the location of the total demand curve for corn during this period. That is to say, livestock producers would take more corn at the same price as before.

From 1866 to 1920, the production of corn increased at an equal pace with the increases in the demand for corn due to increases in the number of livestock. If the two series are plotted together on the same scale in a time chart, the two curves lie roughly on top of one another from beginning to end of the period.

One might expect then to find that the purchasing power of corn remained constant from 1866 to 1920. Actually, however, it doubled during that time. This increase in the purchasing power of corn may be considered as the residual increase remaining after the influence of an increase in livestock numbers and a commensurate increase in corn production has been removed.

The reason for this residual increase in the purchasing power of corn was that the demand for corn *per head* of livestock increased with the passage of time.

The chief reason for this increase in the per capita demand for corn was the rise in the purchasing power of hogs and cattle that took place throughout the period.[1] From 1866 to 1920, the farm purchasing power of hogs more than trebled. Hog producers, getting more money for their hogs, paid higher prices for a given quantity of corn than before. This may be represented by a vertical rise in the demand curve for corn.

The rise in the purchasing power of hogs cannot, however, be taken as a direct measure of the vertical rise in the position of the demand curve for corn.

It does not follow, simply because an increase has taken place in the price of a good, that there has been an equal vertical rise in the position of the demand curve for it. Whether a shift in the location of a demand curve, either upwards or to the right, will result in an increase in the price or in the quantity taken, or both, depends upon the conditions of supply: that is, upon the slope of the supply curve and changes in its location.

Under conditions of constant costs, for example, a vertical rise in the demand curve would result in an increase, not in the price for the same quantity of corn, but in the quantity taken at the same price. Conversely, with a fixed stock of a good, a horizontal shift to the right in the demand curve would result not in an increase in quantity taken at the same price, but in an increased price paid for the same quantity. The nature of the supply curve, and shifts that may have taken place in its location, determines the proportion in which an increase in demand, either upward or to the right, is expressed as an increase in the price or in the quantity taken.

Shifts in the location of a demand curve thus are not directly measurable by changes in purchasing power. To measure these shifts, one should not concern himself with purchasing power, for that is simply the location of the intersection of the demand and supply curves. Instead he should study the changes in the two factors,

[1] The changes in feeding methods, the transition from range to feed-lot finishing of cattle, and the use of modern breeds, are other changes that have affected the demand for corn per head of livestock. But they are difficult to measure statistically, and in any case are not as important as the changes that took place in the purchasing power of livestock.

population numbers and demand per consumer, which determine the position of the demand curve itself.

A vertical shift in the location of the demand curve generally has a different effect upon price from that of an equal horizontal shift.[2] This is clear if demand curves of constant elasticity are considered. These curves appear as straight lines when plotted on double logarithmic paper. With such curves, the relative effect upon price of vertical and horizontal shifts in demand depends upon the elasticity of the demand. For demand curves with elasticity less than unity a shift to the right results in a higher price than an equal percentage shift upward. For demand curves with elasticity greater than unity the converse holds. For demand curves with elasticity of unity, however, the effect of equal percentage vertical and horizontal shifts is the same. These things are true regardless of the shape or slope of the supply curve. Interesting complications arise when demand curves are considered whose elasticity is not constant.

The chief reason for distinguishing between vertical and horizontal shifts in the demand curve is the usefulness of the distinction as a conceptual tool in the analysis of secular movements. In the analysis of year-to-year or month-to-month fluctuations about the secular trend of prices, the chief concern is to determine the slope of the curve, and the changes taking place in that slope with the passage of time. The study of secular movements, however, calls for a different technique; it involves the measurement of the horizontal and vertical shifts which have taken place in the location of the demand curve as a whole. This calls for analysis of changes in the two factors, population numbers and demand per consumer, which respectively determine the horizontal and vertical position of the demand curve.

The Concept of Supply

A similar word may be said concerning the concept of supply. Supply here of course is used in the same sense that demand has been used: that is, in the schedule sense. Supply thus is a different concept from production. Production depends upon two things, price on the one hand and cost of production on the other. Supply does not depend (directly) upon price. From 1866 to 1920, the production of corn increased several times over; but the supply of corn (in the schedule sense) may not have increased at all.[3]

The accompanying figure illustrates this point. It shows the shifts in the location of the equilibrium points between the supply of and demand for corn for successive decades from 1866 to 1929. The data for the different intersection points are the average trend values of the purchasing power and the production of corn by decades. It would be possible to consider these intersection points (disregarding the 1922-29 point) as lying on a supply curve whose position remained unchanged; that is, to consider that the production of corn increased in response to increasing demand, no change taking place in supply (in the schedule sense). This view would be incorrect. The data shown in this chart do not constitute a supply curve. They do not show the production of increasing quantities of corn at increasing costs, the general conditions of supply remaining unchanged; instead, the conditions of supply were changing throughout the period, a violent change taking place after the World War. All that the chart shows is the increase in the purchasing power and in the production of corn resulting from changes both in supply and in demand. It shows the progress of a race between two factors—the increasing marginal cost of the larger quantity of corn

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[2] See the article by Dr. Warren Waite in page 620 of the October, 1930, JOURNAL OF FARM ECONOMICS.

[3] See Taylor, F. M., Principles of Economics, p. 270-271, and Souter Part III, Equilibrium Economics and Business Cycle Theory: A Commentary, Quarterly Journal of Economics, November, 1930.

produced in response to an increasing demand, and the development of improved methods of production which have the effect of cutting marginal production costs.

This second factor, after lagging behind the other from 1866 to 1920, overtook it at a bound after the World War at the end of that period. Since the War the purchasing power of corn has fallen 25 per cent. In the face of this decline, however, producers are producing almost as much corn as before. The production of corn has decreased only 4 or 5 per cent. The supply of corn (in the schedule sense) therefore has materially increased. The supply curve has shifted vertically downward.

But this brief statement needs amplification. The supply schedule is built up on a foundation of two layers—prime costs overlaid with supplementary costs. The supply situation therefore can be represented graphically by two supply curves, the upper

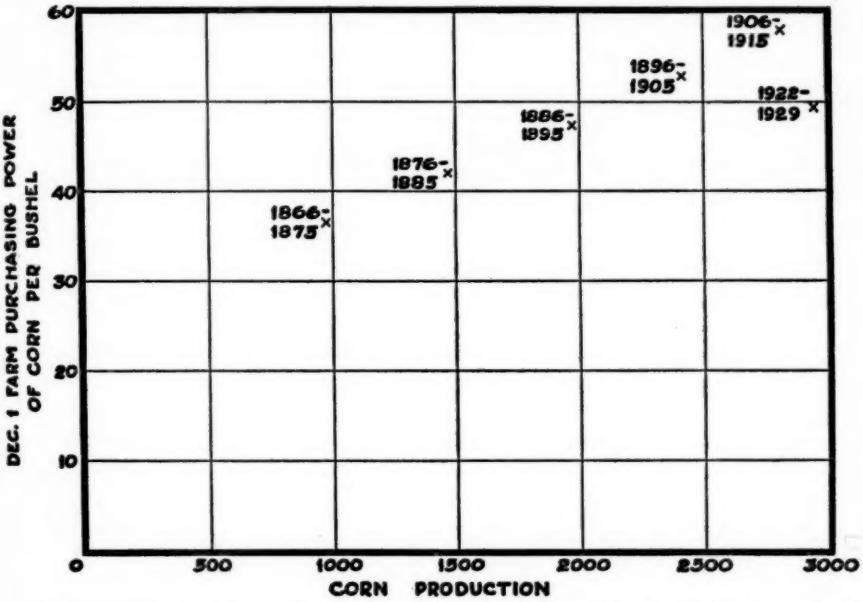

Figure 1.—Intersection points of Successive Corn Demand and Supply Curves, 1866 to 1929.

curve representing supplementary costs, and the lower representing prime costs; though, as Marshall points out, the line of division between the two is blurred.

What has happened since the War is that the demand curve has descended part way into the supplementary cost area. Since farmers cannot move freely and easily out of corn production, they responded by temporarily accepting a return that was insufficient to cover their supplementary costs. Only the supplementary cost curve shifted downward, at first, and its movement was temporary.

Farmers put up with this condition for a time. The net movement of population from the farm to the cities of about one million a year during the last decade, however, bears out Marshall's further observation that it is "just as essential in the long run that the price obtained should cover general or supplementary costs as that it should cover prime costs." Whether this condition of stability has yet been reached is not known. The cessation of the net movement to the city in 1930 does not afford an answer, for conditions were not normal in 1930.

Application of Supply and Demand Concepts

Additional light might be thrown upon some of the problems encountered in the analysis of secular movements by a shift in emphasis from the study of production and price to the study of demand and supply.

Production and prices are simply two coordinate measurements, describing but not explaining the location of intersection points of demand and supply curves. Changes in production and price are the resultants of changes in demand and supply. Prices exercise a reflex influence directly upon production, but not directly upon supply; they directly influence consumption, but not demand.

Instead of studying secular movements in production and prices, then, one might be on more fundamental ground to go behind the production and price data, and analyze directly the secular changes in the location of the supply curve and of the demand curve—briefly and accurately, the secular changes in demand and supply.

The demand and supply curve each rest upon two factors which from the point of view of economic science are ultimates, and do not mutually determine one another in the sense that Marshall meant. The supply curve rests upon the marginal costs of production and the number of suppliers. The demand curve rests upon the marginal utility of the good and the number of demanders. One would therefore study these four factors separately. He would be on firmer footing, for two reasons; first, that these are the factors *behind* changes in production, consumption and price; and second, they do not mutually interact in the way that production, consumption and price do.

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COLLECTIVE FARMING AMONG VEGETABLE GROWERS IN THE COASTAL REGION OF CALIFORNIA

An interesting form of land tenure exists among the vegetable growers in the coastal region of California. The land is owned in large blocks by individuals or corporations. The vegetable growers, who are chiefly of Italian origin, form informal partnerships to lease the land, finance the undertaking, and conduct the enterprise. Tracts ranging from 40 to 200 acres, with the majority from 60 to 100 acres, are rented by these partnerships. Prevailing rents are from $35 to $50 an acre. The number of growers in a partnership varies from 2 to 12, depending upon the size of the tract leased. It is considered that one man is needed for each 15 acres cultivated; hence from 4 to 6 partners is the usual number. There has been a tendency, however, for the number to decrease with the development of power machinery.

This form of tenure has been prevalent in the coastal region for more than thirty years.[1] It arose largely from the inability of individuals adequately to finance large-scale operations in vegetable production. With the artichoke, which is the principal vegetable grown, a sum of from $9,000 to $10,000 is expended on the crop on a tract of 60 acres before an income is received. Another influence has been that the equipment necessary to farm 15 acres can be utilized during the same season on from 60 to 100 acres.

The arrangements among the individuals are of particular interest. Those who have been familiar with this form of tenure for many years state that they have never seen a document which set forth the rights and duties of the individuals in the partnership. However, a member can withdraw from the group by selling his interest to another member or to an outsider. One of the group is designated "the

[1] Statement to the writer made by Mr. G. Scalmanini, formerly manager of the San Francisco Artichoke Growers' Association.

captain,'' whose duty it is to decide the kind of crops and the acreage of each to plant. Although the artichoke is the principal crop grown, other crops such as broccoli, cauliflower, brussels sprouts, peas, and cabbage are cultivated. Another member is known as the ''market man,'' whose function is to dispose of the crops. In the early days, the ''market man'' brought home the proceeds in a sack, and once a week or once a month the group made division. All bills were paid first and the remainder divided among the members according to their holdings in the partnership. Some members might hold half-shares and receive wages for half of the time they contributed, while others might hold more than one share and receive a share of the net proceeds accordingly.

A development in recent years is that the ''market man'' from one of the groups becomes the selling agent or shipper for several groups. He frequently holds an interest or share in each of the groups whose products he sells. In addition, he often negotiates credit and leasing arrangements.

The partnerships are constantly changing, not only from within but also as an entity. They are usually known to the public by the name of one of the prominent members of the partnership. Some affix the word ''Company'' to the member's name, as Martini and Company, or E. Bellone and Company. A comparison of a list of 208 of these groups as they existed in 1925[2] and in 1931 showed that approximately 20 per cent were changed to such an extent that they were known to the public by a new name and 30 per cent of those which were in existence in 1925 were entirely dissolved.

One house furnishes quarters for the members of the partnership if only one is married. If more than one is married, additional quarters are usually constructed. On some farms the women live in one house and the men in another. In one section of the region, the women live in town and the men on the farm.

The advantages of this form of tenure are that it permits the collective utilization of land and capital, admits of some division of tasks, and at the same time preserves individual interest in the enterprise. In some respects it is similar to the Russian system of collectiv farming in that labor is pooled and income divided. In the Russian collectives, however, the members are assigned to certain groups and the land and instruments of production are the property of the community.

E. A. Stokdyk

University of California

SEVENTH ANNUAL SESSION OF THE AMERICAN INSTITUTE OF COOPERATION

The seventh annual session of the American Institute of Cooperation was held on the campus of the Kansas State College in Manhattan, Kansas, during June, 1931. The credit courses were given throughout the month and the trade conferences met during the week of June 8-13. The attendance came from 33 states and three foreign countries. More than 1500 people were in attendance at the sessions of the trade conferences and approximately 75 students enrolled for the credit courses.

The forenoon sessions of the trade conferences were devoted to consideration of the general problems affecting cooperation among agricultural producers in the United States. The afternoon sessions were broken up into commodity groups.

The attitude of those present and taking part in the program and discussions indicates that cooperative leaders are keenly aware of the need for greater control

[2] A list of partnership names in 1925 was furnished the writer by Mr. F. L. Lathrop, formerly manager of the Pescadero Lands Company.

over the output of agriculture and that the lack of stability of agricultural production and of the price level is one of the outstanding problems interfering with the accomplishment of the objectives of agricultural cooperation in the United States.

The work of the Federal Farm Board was appraised by six speakers, no one of whom was connected with the Farm Board. This appraisal was friendly but critical. Many of the activities of the Farm Board were interpreted as experiments in a new field. The outcome of some of these experiments, notably the effect of stabilization activities, on ultimate price levels did not make the speakers unduly optimistic. Moreover, the general consensus of opinion was that the work of the Farm Board had been salutary and that its program should go ahead without interference.

Throughout the entire conference the thought was constantly expressed that unstable production was one of the major problems confronting those endeavoring to market farm products cooperatively. Numerous suggestions which would give greater stability of production, particularly of livestock, were made.

The next annual session of the American Institute of Cooperation will be held in Durham, New Hampshire, in 1932.

W. E. Grimes

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RELATION OF THE WHOLESALE PRICE OF PORK TO THE PRICE OF HOGS

Meat packers have maintained for many years that the price of hogs on the central markets was determined by the price of meat. Many persons have been suspicious of this claim, granting that it might be true in the long run but doubting its validity over a short period. In order to measure the relationship between the wholesale price of the principal pork products and the wholesale price of hogs at Chicago, an analysis was made of weekly prices at Chicago from March 1, 1923 to December 31, 1930. Weekly wholesale prices are available only for important fresh meat cuts. For this reason the calculation of the value of the carcass based on yield was not possible. Variation in the yield of the various wholesale cuts with changing prices also discouraged this approach since weekly yield figures are not available. The method of multiple correlation was used in this analysis as it was believed that prices of representative parts of the hog would serve as measures of the entire carcass when used in this way. Average weekly prices of the principal wholesale pork cuts are available for the period. These prices, reported by the meat reporters of the Bureau of Agricultural Economics, are based on actual sales on the wholesale market.

The period March 1, 1923 to December 31, 1930 was used because data were available only for this period. Market conditions throughout this period were reasonably comparable. This period of 419 weeks, while not long enough for most studies of time series, is probably sufficient for the present study.

No adjustments of any kind were made in the data. Actual prices were taken without correction for the price level, seasonal variation, or trend. To simplify the calculation, the data were coded, using $.25 and $.50 intervals in price.

The weekly average wholesale price of 200 to 250-pound hogs at Chicago was used as the dependent variable. The following independent variables were used:

(1) The average wholesale price per hundred pounds of fresh 12 to 16-pound hams, at Chicago.

(2) The average wholesale price per hundred pounds of 10 to 12-pound loins, at Chicago.

(3) The average wholesale price per hundred pounds of fresh pork shoulders, New York style, at Chicago.

(4) The average wholesale price per hundred pounds of pure lard, refined, in hardwood tubs, at Chicago.

A coefficient of multiple correlation $R = 0.94 \pm 0.004$ was obtained, showing a surprising relationship. The following regression equation was obtained:

The price of hogs per hundred$= -\$1.4035 + .19053$ (price of lard per cwt.) $+$ .224835 (the price of fresh pork shoulders per cwt.) $+ .028335$ (the price of fresh pork loins per cwt.) $+ .24416$ (the price of fresh hams per cwt.).

In the figure the actual average weekly price of 200 to 250-pound hogs at Chicago is contrasted with the price estimated from the regression equation. The two curves agree almost without exception as to direction, even in the cases where the figures are widely divergent. As in most calculations of this kind, the greatest error occurs at the troughs and crests.

Contrary to expectation, the price estimated from the wholesale price of pork

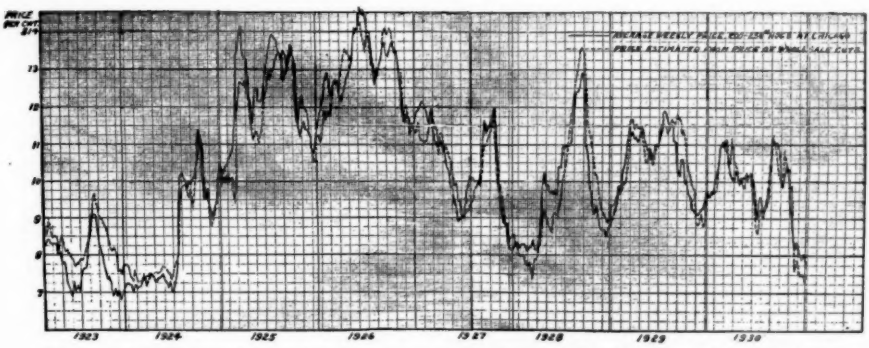

FIGURE 1.—Comparison of the average weekly price of 200 to 250-pound hogs at Chicago with the price estimated from the price of the principal wholesale cuts.

tends to lag from one to three weeks behind the actual price of hogs. Hog prices and wholesale fresh meat prices are mutually interdependent. Hog prices at any given time are determined in the main by the supply of hogs on the market, the current demand for meat, and the probable demand in the near future. Viewed from the standpoint of supply, it appears that packers, having gauged the supply of hogs, take into account not only the current wholesale prices of pork and its products, but the prices which are likely to prevail in the next few weeks before finally deciding on their bid for hogs.

Viewed from the standpoint of demand it might be argued that packers having paid for hogs on a basis of supply were faced with the problem of moving this meat into use. If demand for pork and its products were very stable, then one would not expect wholesale prices to reflect changed hog supplies until such a time as these increased supplies showed up in the meat trade.

The fact that such a large fraction of the hog has an alternative outlet in the cured meat industry no doubt tends to stabilize meat prices to some extent and to minimize the effect of rapid changes in the demand for meat from day to day and week to week, which are to be expected on account of weather, competing foods, perishability, and the like.

The apparent importance of each of the various independent variables is shown

by the coefficients of separate determinations as follows: hams, 39.01 per cent; shoulders, 31.91 per cent; loins, 5.50 per cent; lard, 14.01 per cent. Great care should be exercised in the interpretation of these coefficients. As explained at a later point, these independent variables represent the various parts of the carcass and the determination may be more or less than expected on a basis of yield.

The very small determination shown by fresh pork loins in this analysis strengthens this point. Pork loins are extremely variable in price and, while they show a significant gross correlation with hog price, the net relationship is small. The products, hams, shoulders, and lard, for which there is a packing outlet into less perishable forms, show much greater price stability and were much more important as determinants of hog prices in this analysis.

On a basis of yield, other things remaining the same, the price of hogs should change about $.19 per hundredweight for each change of $1.00 per hundredweight in the price of lard. The regression coefficient indicates that the actual change is $.19 per hundredweight. With hams, a change of $1.00 per hundredweight in wholesale price on a basis of yield should be associated with a change of $.17 per hundredweight in the price of hogs. Actually, according to the regression coefficient, the change was $.24. With loins, on a basis of yield, a change of $1.00 in the price per hundredweight should be associated with a change of $.125 per hundredweight in the price of hogs. Actually, according to the regression equation, the change was $.03 per hundredweight.

In general, packers appear to base their calculations of the value of hogs to a greater extent on edible products whose prices are more stable than would appear to be justified on the basis of the yield of the various products.

This does not prove to be true of lard. Here the regression coefficient and the calculation on a basis of yield are almost identical. The regression coefficient for lard prices apparently measures completely the lard content of the carcass but nothing more. This is to be expected since lard is the only product of this nature except fat back. The price of fat backs is very closely correlated with lard prices since fat backs are likely to be rendered rather than salted when prices are low as during 1930. Lard from sources other than fat backs constitutes about 11 per cent of the carcass. The lard in the fat back constitutes about 10 per cent of the carcass.

According to the reports of the Bureau of Agricultural Economics, approximately 19 per cent of the carcass weight was actually made into rendered lard, for hogs slaughtered during 1929 and 1930. This figure was used in computing the lard yield in the preceding calculation.

The regression coefficient for ham prices measures not only the association between hog prices and ham prices, but, to a considerable extent, that of other edible products as well. The coefficient for loin prices falls very far short of measuring the association that is expected on a basis of yield. The erratic nature of price fluctuation and the lack of a cured market outlet may explain this. Since pork loins are used as fresh meat, their relative importance as a determinant of hog prices varies within rather wide limits. At certain periods when hogs are scarce and demand for meat is high, loins may be closely correlated with hog prices. At other times when there is an abundance of fresh meat, loins may sell very low relative to hogs because of the lack of a packing outlet. Had seasonality been taken account of, probably the coefficient of separate determination for loin prices would have been increased. Another possible explanation of the relative unimportance of loin prices, may be found in the intercorrelation between loin prices and the prices of hams and shoulders.

The intercorrelation between hams, shoulders, and loins makes any conclusions on a basis of regression coefficients or separate determination questionable. The sum of the net regressions and of the coefficients of separate determinations for the three

variables, ham prices, loin prices, and shoulder prices, is undoubtedly significant, however, since it measures the importance of the price of the edible portion of hog in determining hog prices.

E. C. Young

Purdue University

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Bartlett, Roland Willey. *Cooperation in Marketing Dairy Products.* New York: Charles C. Thomas. 1931. 299 pp. $4.00.

Brookings Institution. *Essays on Research in the Social Sciences.* Washington: Brookings Institution. 1931. 194 pp. $2.00.

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Rogin, Lee. *The Introduction of Farm Machinery,* etc. Berkeley: University of California Press. 1931. 251 pp. $3.50.

Two Hundred Vermonters. *Rural Vermont.* Burlington: The Vermont Commission on Country Life. 1931. 385 pp.

BOOK REVIEWS

Factors Affecting the Price of Livestock in Great Britain, by K. A. H. Murray, Oxford: Clarendon Press, 1931. 180 pp. $2.75.

This small book of less than 200 pages contains the results of a preliminary study in which, as stated in the Preface, "An attempt has been made to discover and measure some of the more important factors affecting prices of livestock in Great Britain." This study illustrates the growing interest in the application of statistical methods in analyzing economic problems in agriculture and it adds another country to the list of those in which at least a beginning has been made in this direction. American price analysts will also be interested in noting that the general approach used in this study is one which originated, for the most part, within our own boundaries. This is no doubt due to the fact that much of the study was carried on during the author's three years of study and travel in the United States.

The book consists of six parts. In Part I, the introduction, the author discusses briefly: (1) The history of the livestock industry in Great Britain and its present importance in British agriculture and (2) trends and present status of meat consumption in Great Britain. The industrialization of Great Britain during the past century and a half has affected materially the livestock industry in that country. This industrialization process which has led to a large increase in the proportion of urban population accompanied by a decrease in the rural population, led to a large increase in the importation of foodstuffs from abroad. Until suitable methods of transportation were developed, only those products which were practically imperishable could be used in international trade, and grain rather than meat was well adapted for importation. As a result, an increasing proportion of the land was utilized for pasture and the production of livestock and livestock products became of increasing importance in British agriculture. The author points out that the sales of livestock and livestock products now account for approximately two-thirds of the total value of agricultural and horticultural products sold off the farms. Despite this increase in livestock production, it has not been sufficient to meet consumption requirements, since meat consumption has become a more important part of the British diet. Per capita consumption of meat increased 23 per cent in the last half century and about half of this consumption during the three years 1921-22 to 1923-24 was imported. Per capita consumption varies materially within the different population groups, however, the variations, for the most part, being directly related to variations in income.

The author then, in three parts, deals respectively with cattle and beef; sheep, mutton and lambs; and pigs and pig products. Part 5 contains a summary of the author's conclusions. Part 6, the appendices, contains the basic data used in the analyses together with an explanation of Tschetverikoff's method of computing the "moving or sliding" coefficient of correlation, and an illustration of how it may be applied. The last appendix table shows twelve calculated relationships between supply and price for different kinds of livestock and livestock products.

Treatment of data and method of presentation for each class of livestock and meat is quite similar, consisting principally of the following sections: Consumption; home produced supplies; imported supplies; price movements, and factors affecting prices. The section dealing with consumption of each kind of meat contains brief descriptions of the long-time trends in consumption of both home-produced and imported meats and the shifts in the proportion which was produced at home. Under the heading of home-produced supplies, the author presents the trend and year to

year changes in production during the last 60 years. The trend of production has been upward for cattle during this period, downward for sheep and about steady for hogs. The author concludes that there is little or no evidence of regular cycles in cattle production such as those which characterize changes in cattle numbers in the United States, but the production of both sheep and hogs was found to move in fairly regular cycles of about the same duration as those in this country and to be due to the same general influences. The seasonal distributions of marketings are shown by indices of seasonal variation of receipts at representative markets and the author explains the conditions in production which largely account for such distributions of supplies. Some of the shifts in the character of production and time of marketing are indicated by the changing proportion of livestock numbers of different age groups and shifts in the seasonal variation of receipts during the last half century. Most of these tendencies are similar to those which have been under way in the United States and may be attributed largely to greater efficiency in production and a stronger consumer demand for the smaller cuts of meat.

With imported meats constituting more than half of the meat consumed in Great Britain, the author properly gives considerable attention to the types and qualities of livestock and meat imported and the economics of livestock production in the countries where these imports originate. One is impressed with the thorough manner in which the author has, after apparently digesting all available material, summarized the livestock situation in the countries which constitute the actual and potential sources of imported meats into Great Britain. To those who are interested in the international livestock and meat trade, this assembly of pertinent facts and basic statistics, classified by kinds of livestock and meats and by countries, should prove a convenient reference. The emphasis placed on this phase of the livestock production problems typifies the trend of thinking in Great Britain, a country which is dependent upon foreign countries for such a large proportion of its food supplies. In the author's opinion, however, the students of the livestock problems in Great Britain have been inclined to place too much emphasis on the effects of foreign competition.

The treatment of long-time price movements involves, principally, comparisons of meat prices with live animal prices and the general price level. In the sections on cattle and beef, and sheep, mutton, and lamb, the premiums on prime-quality meat are shown to follow closely the value of gold. This, the author attributes to changes in the consumer purchasing power which moves inversely to the price level. The lag of wages behind the price level increases the purchasing power of wages during periods of declining prices, and since wages, salaries, and fixed incomes represent about 72 per cent of the national income, the author concludes that the purchasing power of wages, derived by dividing the index of wages by the general wholesale price level, measures, in a general way, changes in demand. This measure of demand, which is also used in the correlation analysis, appears inadequate. First, an index of earnings should be used instead of an index of wages. This is especially necessary in measuring the purchasing power of wage earners in countries such as Great Britain where there are marked changes in unemployment. Secondly, the index of earnings should be adjusted by a cost of living index computed from retail prices, rather than by an index of wholesale prices. Such an index of demand based on earnings adjusted for changes in cost of living would no doubt be quite different from the one used in this study, due to the marked changes in unemployment and the lag of retail prices behind wholesale prices.

In the analyses of the factors affecting prices, the author measures the effect

of supply on price by applying the equation, $y = \frac{b}{x^a} + c$, used so frequently by Warren and Pearson in their bulletin, *Interrelationships of Supply and Price.* In the case of cattle, he relates the purchasing power of wages, computed by the method referred to above, to the purchasing power of fat cattle in England and Wales in order to measure the effect of demand on price.

In measuring the relative influence of the various factors affecting price, the method of multiple linear correlation was used. A number of correlations are presented, most of them being an attempt to explain the changes in the purchasing power of a specific kind of livestock or meat. Only two independent variables were employed in most cases. The two independent factors most commonly used were (1) the purchasing power of wages and (2) the respective livestock numbers in Great Britain. The correlation analysis was confined entirely to annual data, the number of observations in most cases ranging from 25 to 30, and the coefficients of correlation ranging from .73 to .94. The principal conclusions from the correlation analysis may be summarized as follows:

1. The purchasing power of fat cattle tends to rise during the period of falling prices and to decline during a period of rising prices.
2. Very little relationship was found between supply and price of cattle and beef. Demand as represented by the purchasing power of wages was about five times more important in the determination of fat cattle prices than supply.
3. There is little relationship between the supply of imported beef and the price of beef in Great Britain.
4. The principal factors affecting the purchasing power of mutton during the period studied were the purchasing power of wages and the number of sheep in Great Britain. The effect of sheep numbers on the purchasing power of inferior quality of sheep was insignificant, however, and changes in the annual receipts of imported lamb and mutton had but little or no effect on the purchasing power of either the better or poorer qualities of mutton.
5. The number of pigs in Great Britain is the most important factor determining the purchasing power of pork, imports being of small account. In the determination of the purchasing power of bacon, however, imports of bacon play a greater part but are still not so effective as the home-produced supply.
6. The purchasing power of home-produced pork shows a greater reaction than the purchasing power of home-produced bacon to changes in the home supply. This difference is due to the greater effect of the import supply of bacon on bacon prices than on the import supply of pork on pork prices.

In the reviewer's opinion, the conclusions drawn from this part of the study are, in general, much more definite than the results of the analysis justify. Much could be said against stating conclusions dogmatically based on any correlation analysis, but in view of the crude measures of supply and demand factors, the questionable reasonableness of some of the conclusions and the large number of relatively low coefficients of correlation, the criticism seems especially justified in this case. Without attempting to cite all of the cases where this criticism applies, it is well illustrated in the conclusion that there was little relationship between supply and price of cattle and beef. In view of the supply-price relationships obtained for most other kinds of livestock and meat, one questions the validity of this conclusion. According to the author, the most satisfactory results in the cattle price analysis were obtained when the number of cattle under two years of age one year preceding, and the

purchasing power of wages were used as independent factors. The first factor is a very rough measure of supply, since changes in numbers are frequently quite different from changes in market supplies the following year. The limitations in the use of the second factor as an index of demand also indicate that the results of this analysis do not warrant such conclusions. One can also take exception to the conclusion that imported supplies have little or no influence on most kinds of livestock and meat in Great Britain. With imported meats constituting such a large proportion of the meat consumed in that country, it again appears likely that there are shortcomings in the technique involved.

Regardless of the rather dogmatic conclusions based on the results of what was indicated to be only a preliminary study, the book has considerable merit. It represents a pioneer effort in livestock price analysis in Great Britain, where most of the foundation stock of the American livestock industry originated. Furthermore, it contains much information regarding the economics of livestock production in that country, and no doubt it will serve as a stimulus to other research workers who may desire to make further studies in this field.

G. B. Thorne

Bureau of Agricultural Economics

The Cooperative Marketing of Livestock, by Edwin G. Nourse and Joseph G. Knapp. Washington: The Brookings Institution, 1931. 486 pp. $3.50.

This book has had its birth at a most opportune time. Some fundamental changes have taken place and are in process in the field of livestock marketing. The activities of the Federal Farm Board are in a developmental stage. The book is, therefore, in no sense a postmortem; nor is it one dealing primarily with the possibilities and promise of future changes. It attempts to assay the progress which has been made and to subject to careful analysis the present program. Like all books dealing with this dynamic subject of cooperative marketing, it is concerned with facts which in considerable degree are perishable in that the situation described is subject to such decided and rapid changes.

The main body of the book is divided into three parts. The first part reviews cooperative shipping developments. In its six chapters are traced the historical development of cooperative livestock shipping, its growth in different areas, its motives and aims and the structure and methods employed. Some consideration is given to general overhead organizations. With respect to its present status, the authors point out (p. 37) that "There has been discernible a tendency toward consolidation of previously separate local units." They conclude that "These newer developments, although still in their formative stages, promise to displace the large number of highly local associations with a smaller number of larger units integrated much more closely into a comprehensive selling organization."

Part two is labelled "Cooperative Selling." This part deals with cooperative terminal selling agencies and also with direct marketing developments. There may be those who will be disposed to disagree with the authors in this selection of terms. The practice is not uncommon of referring to many types of local cooperative enterprises as not being engaged in marketing. Activities of shipping associations fall squarely within the field of marketing and consequently they would seem entitled to classification under the head of cooperative selling along with the terminal groups.

While Parts I and II are mainly descriptive and do not add anything particularly new to the material available in this field they serve a highly useful purpose in bringing the facts together in a comprehensive and connected form. An acquaintance with

their content is essential to a proper understanding of present developments under the Federal Farm Board and otherwise.

Part III, dealing with "Current Developments," is the portion of the book which naturally is evoking the greatest interest. The first two of its six chapters deal with an analysis of accomplishments of cooperative developments up to the establishment of the Federal Farm Board. The last four chapters deal primarily with Farm Board plans and policies.

At the outset of Part III, the authors consider the question, "Has cooperation reduced marketing costs or improved service?" Their analysis of this is separated into a consideration of the influence of cooperatives upon marketing practices and costs (Chap. XIII) and the price results of cooperative methods. (Chap. XIV).

With respect to the contention that cooperative shipping associations "would substitute one paid manager for many competing buyers and thus reduce the cost of soliciting business," the conclusion is reached that "This hope has not been realized in any large way in practice" (p. 224). The growth of direct buying and truck hauling is brought into the analysis, the point being that these tend to increase rather than lessen the number of local middlemen. To the reviewer it seems that the writers have confused their analysis of this point by bringing together matters which are somewhat unrelated. These developments, of course, have affected and limited cooperative shipping but they did not spring into existence for that purpose. Moreover these agencies are not available everywhere. Further consideration might well have been given to areas where these counteracting influences have not been at work. With regard to the influence of cooperative shipping on handling methods, the authors conclude that "the cooperative shipping movement can be given definite credit for improvement in the physical handling of livestock." (p. 229).

With respect to terminal commission agencies, three questions are raised: "(1) Have they reduced the number of middlemen and/or the burden of labor and expense incidental to securing business? (2) Are they more efficient and economical in their methods of physical handling? (3) Have they reduced inequalities in the distribution of returns among shippers?" (p. 231). It is indicated that the answer to the first must be "straddling and qualified." In answer to the second, the conclusion is that "it is our belief that the efforts of the terminal commission companies have been of real value" (p. 244). For the third, "a rather satisfactory conclusion seems justified" (p. 246).

The chapter on effect on prices (XIV) gives consideration to collective bargaining and to direct selling. The authors believe "that there is sound economic logic in the contention that a cooperative commission association which is entrusted with a quarter, a third, or a half of the hogs received at a given stockyards market may, by virtue of its collective bargaining position, put up some effective resistance to efforts to depress prices artificially on that market" (p. 257). Control over 30 or 40 per cent of the receipts is regarded as adequate to this end and the point is made that if the control were increased to 50, 60, or 75 per cent additional gains need not follow. It is pointed out that the greater control "might well create a danger of attempting to dominate the market and force prices above an economically justified level through monopolistic pressure" (p. 260). The reviewer feels that the authors tend to exaggerate this danger. After all, cooperatives in livestock will have to acquire considerable stability and permanence before they will obtain such support and it is to be expected that they (like various cooperatives in other lines which now have such a degree of control) will be awake to the consequences of abuse of their power.

The remaining chapters of the book deal primarily with the Federal Farm Board's

program. While this is subjected to a critical analysis the criticisms are not of a biased or unfair nature. Dealing with these developments in a critical way seems praiseworthy. There has been entirely too much assumption that the program developed by the Federal Farm Board should be accorded support merely because it is that of a governmental agency and is representative of governmental policy. Men in governmental capacities are merely human and as such are liable to err. Governmental agencies such as the Farm Board would seem to have more to gain from critical studies of this character than from writings which merely seek to justify or uphold their policy.

The procedure followed by the Federal Farm Board in developing its plans for livestock organization is outlined and the differences of view arising in this connection are reviewed. The two final chapters are of special interest. Chapter XVII analyzes the economic issues involved while Chapter XVIII considers Farm Board developments and cooperative principles. One significant conclusion concerning the economic issues is that "It is through systematizing rather than through concentration of the selling function that the price structure will be made sound" (p. 336).

One conclusion regarding the Farm Board is that "Political expediency has overruled cooperative doctrine" (p. 345). As an extenuating circumstance, it is pointed out that the Agricultural Marketing Act was the answer to the demand for relief legislation which had become a political issue. It is pointed out that "results were at a premium" (p. 346). A further conclusion is that "Development of a livestock marketing organization has proceeded along promotional rather than cooperative lines" (p. 350). It is said that "Plans hastily formulated by a small group were taken out to the country for immediate execution. Too often those who asked questions for the sake of arriving at a correct understanding of the proposals made have been branded as obstructionists" (pp. 350-1).

Attention is called (footnote p. 353) to the fact that the Division of Cooperative Marketing which was transferred from the Bureau of Agricultural Economics to the Farm Board, was set up originally under the Cooperative Marketing Act of 1926. Because this act contemplated assistance to cooperatives generally the point of the authors that "it is difficult to see how the Board could refuse general educational and promotional assistance," seems well taken. While it naturally is outside the purview of this particular study, the question might well be raised for consideration elsewhere of the desirability of the transfer of this division from its original setting.

Messrs. Nourse and Knapp are not in harmony with the viewpoint which seems to have dominated the leaders of the national movement in the matter of commodity control. Their opinion is that "the really attainable and valuable fruits of collective bargaining can be fully secured by an organization of the size of either the National Livestock Marketing Association or the Farmers' Livestock Marketing Association. Further gains in this direction as a result of a merger would not be striking, and certain dangers flowing from such a consolidation should not be ignored" (p. 354). The authors apparently feel that both of these groups might well be given Farm Board encouragement and support. This view the Board has not been willing to accept, contending that the Agricultural Marketing Act directs it to avoid duplication. As brought out in the work under review, however, the policy of non-duplication has not been adhered to with perfect consistency because the set-up acceptable to the Board itself has resulted in duplicating agencies in certain markets.

The conclusions on this point may be open to the objection that sufficient consideration does not seem to have been given by the authors to the problems which the Board would face if it were to attempt to give equal recognition to the opposing factions. They appear to be on sounder ground when they point out some of the weaknesses in

the plans. The Committee of Fifteen is criticized for having failed to build its plans adequately on the foundation of local shipping associations. The Board, "instead of perceiving and correcting the initial mistake, decided to push forward under the same pattern of organization in the territory where the National Producers' organization had been most active" (p. 357). Attention is called to the fact that the organizations included in the program in the West and Southwest are of a different pattern.

In the concluding part of the discussion, definite suggestions are outlined with respect to the organizational development which appears desirable for livestock. These plans contemplate a closely knit organization founded upon local and district organizations of farmers, federated into the regional and national bodies. The two basic features are: "(1) Comprehensive organization of the livestock producing industry for the purpose of marketing its product, and (2) a coordinated selling system set up to cover the whole range of livestock markets and to render an economical and flexible service to all parts of the industry" (p. 364).

In addition to the main body of the book, it has several appendices: A, relating to Price Differentials at Terminals; B, relating to Price Structure at Interior Markets; C, relating to Direct Purchases and Hog Prices; and D, the certificate of Incorporation and the By-laws of the National Livestock Marketing Associations. Appendices A, B, and C were prepared by Knute Bjorka.

The authors are entitled to much credit for having dealt so frankly and fully with a subject as highly controversial as this. Under the circumstances, it would be expecting too much that everyone would accept all conclusions without question. The book is a valuable addition to the available literature in the field of agricultural cooperation. It is hoped that it will be widely read, not only by those whose interest is primarily that of students but also by those who have a part in the organization development.

O. B. Jesness

University of Minnesota

Marketing Principles, by John F. Pyle. New York and London: McGraw-Hill Book Co., Inc., 1931, pp. xiii, 565. $4.00.

This latest addition to the shelf of marketing textbooks will be of interest to teachers even though it is not significantly different from the more recent books in this field. From a teaching standpoint it is marked by readableness and evidence of real effort to arouse and hold interest. From the standpoint of the marketing scholars its chief interest lies in the refinements of terminology and classification.

The organization of the material follows conventional lines; i.e., the chief stress is upon marketing functions and agencies, supplemented by an examination of marketing problems and illustrated by the review of the marketing of the general classes of goods, and introduced by a presentation of significant developments, the characteristics of the market, and a survey of buying motives and habits. However, much of the material which is commonly discussed in connection with the functional analysis appears in Part IV which is headed "Marketing Problems." The reader is at a loss to understand the interpretation given the concept of "problems" to afford it scope to incorporate much of the functional descriptive material. Under this heading one finds, too, the discussion of Market Price, Cooperative Marketing, The Legal Aspects of Marketing, The Importance of Executive Control in Marketing, and Standards of Marketing Efficiency.

As stated, academicians will be most interested in the definitions of terms and the additions and refinements of categories since problems of terminology and taxonomy are peculiarly pertinent at the current stage in the evolution of the study. Marketing

in Chapter I is held to comprise both buying and selling activities; selling is subdivided into merchandising, advertising, and salesmanship. Later, (see chapter IV, p. 66) in the discussion of the marketing functions the marketing process is first divided into the two broad activities of concentrating and dispersing; each of these then has its appropriate sub-functional enumerations. However, nowhere in this connection is there any reference to merchandising which had been listed as a major division of selling activity. Again, under the selling function there is no reference to sales promotion to which a chapter is devoted later. However, in this chapter sales promotion is defined so broadly as to incorporate practically all of the selling function. Other examples of similar difficulty in deciding upon the use of concepts might be cited. Professor Pyle's work merely further illustrates the current confusion in terminology. It seems to the reviewer that all efforts to push towards some measure of agreement are worthy; even though the amount of acceptance of the given point of view is negligible. Certainly, marketing teachers will have diverse attitudes towards Professor Pyle's interpretation.

Among the refinements of classification, in addition to the functional, the following are of particular interest: (1) the characteristics of demand and supply factors as affecting commodity marketing (p. 173 ff.); (2) agricultural products (p. 180-181.); (3) land (p. 231); (4) consumer goods (p. 253-254); (5) services (p. 277-278).

"Marketing Principles" is a general book particularly well adapted to the elementary semester course where a concise, readable treatment is desired. Teachers of marketing in agricultural states may wish a greater stress upon agricultural products than is found in the two chapters devoted to these. However, there is of course, reference to farm products and problems in other connections; so much so that the textbook should be usable except in the courses that are limited to agriculture.

E. T. Grether

University of California

The Menace of Over-production, by Scoville Hamlin and 17 others, with an Introduction by Stuart Chase. New York: John Wiley & Sons, 1930. 202 pp. $2.75.

This book is a symposium on the problem of over-production. The early chapters on over-production in the coal, petroleum, textile, steel, farming, and radio industries, by leaders of their respective industries present the details of the familiar picture of excess capacity, struggle for volume, destructive competition, and resulting social loss. The chapter on agriculture is by Dr. O. E. Baker and is a restatement of his well-known analysis of the relationships of the trends in the factors affecting the supply of farm products in the United States to the trends determining demand.

The points of view of the contributors are varying, but they are almost unanimous in their demand for rationalization of output, a phrase which most readers will recognize as a polite name for some sort of centralized production control. The waste of material resources resulting from unrestrained competition and the necessity for conservation of resources for the use of the future appears in a majority of the articles. Dr. J. G. Lippman has a chapter under the heading "Land Wastage Encourages Over-production" in which he discusses very briefly the losses in soil fertility resulting from economic exploitation of the soils of the United States. Altogether the earlier chapters of the book give an interesting view of the ideas of a considerable number of leaders of industry on the extent, character, and causes of the condition commonly called "over-production."

The later chapters deal with solutions of the problem. Francis H. Sisson, Vice-president of the Guaranty Trust Co., discussing the Merger Movement as a universal

trend in business organization, and characterizing the Sherman Act as an "obsolete statute erected in an effort to legislate out of existence certain fundamental economic laws" concludes "the age of big business is here to stay." Dr. Virgil Jordan, Economist of the McGraw-Hill Company, however, thinks it probable that "greater stability in standards of living will not be attained without a measure of decentralization which will restore the best features of earlier forms of organization." H. S. Person, managing director of the Taylor Society, says in his conclusion, "Scientific Management . . . is a national weapon to control production." It can be utilized, he says, either voluntarily by particular enterprises, or in all enterprises under a form of suasion suggested by the concept of "rationalization." He does not describe the form of suasion he has in mind.

The editor after summarizing the evidence sets forth in a final chapter his own "Constructive Proposal." The present writer is not at all sure that his own understanding of the proposed plan is clear. It seems to rest on the basic notion that the overhead costs of "Excess Capacity," including interest, depreciation, and the costs of unemployment are not borne in any large degree by those who motivated by profits, are responsible for industrial policy. By substituting income as the motive for labor and capital investment instead of profits, and by submitting industrial policy to the joint control of capital and labor, all factors must pay the penalties of over-production and will have a vested right in their share of net income. Under such a plan, the motive for cautious extension of productive capacity will exist and both workers and owners of capital will be interested to keep down overhead costs. Maximum limits of income return will be set by the government at rates required to insure the proper growth and distribution of wealth, growth of population, and, it is implied, a proper rate of conservation of national resources.

The above, it appears to the writer, are the essential features of the plan proposed. It would be easy enough for a man trained in the principles of classical economics and imbued with the traditions of capitalistic organization of industry, and individual freedom of economic initiative, as we know it, to denounce it, to call it fundamentally unsound, to call it a plan to fuse the Soviet system with American political and economic institutions. The chapter is provocative of thought and stimulating to the imagination. One can only wish that the writer had taken the space necessary to develop his ideas in clearer outline with better organization and more detail.

I. G. Davis

Connecticut Agricultural College

International Control of Raw Materials, by Benjamin B. Wallace and Lynn R. Edminster. Washington: The Brookings Institution, 1930. 479 pp. $3.50.

The World War emphasized as never before the important place occupied by raw materials in the welfare of nations. It turned the attention of statesmen not only to the desirability but the necessity of access to them. The League of Nations early in its existence (1920) instituted an inquiry regarding the extent and nature of the requirements of the different countries for raw materials and their difficulty in obtaining them. These efforts led to the formulation in 1927 of an International Convention for the Abolition of Import and Export Prohibitions and Restrictions. The League continues to be vitally concerned with this question as a fundamental consideration in securing reductions in trade barriers. While the League is straining every effort toward the lowering of trade barriers, governments seem to be exerting themselves in their attempts to protect domestic industry. Hence it goes without saying that the book on international control of raw materials deals with a timely subject.

In this connection it should be noted that the book deals with only one type of trade restriction—control of exports of raw materials—leaving the more prevalent type—protective tariffs and other import restrictions—outside its scope. This, however, should not mislead anyone into assuming that the authors have a more tender regard for protective import tariffs than for monopolistic restrictions upon exports of raw materials. The Director's Preface specifically points out that "there has been no assumption on our [the authors'] part that restrictions of exports of raw materials are either more or less justifiable than the import tariff system to which we ourselves [the United States] are committed"; and the implications of what is said in some parts of the book are, in fact, quite as critical of the system of "import protectionism" in its relation to international economics and world peace as is the main discussion of export restrictions.

The agricultural economist will be most interested, perhaps, in those chapters dealing with sodium nitrate and potash; but it can hardly be assumed that he will fail to be interested in the chapters dealing with attempts to control exports of coffee, rubber, pulpwood, and camphor. Those interested primarily in agricultural products will regret that Greek currants, Egyptian cotton, and Australian butter did not receive consideration in the main text. The purpose of the case discussion, however, is quite obviously to illustrate the leading types of control as a background for consideration of the broader aspects of the problem, rather than to attempt to treat inclusively all measures designed to restrict exports of raw materials.

Quite aside from the commodities discussed, the types of control treated merit the attention of those dealing with the question of legislative aid to agriculture. Certain results emanating from governmental action designed to enhance prices cannot be emphasized too strongly. In sodium nitrate the Chilean Government fostered private monopoly and control. Without question prices were enhanced, but at the same time the synthetic nitrate industry was undoubtedly encouraged by these increased prices. The synthetic product has made effective international control increasingly difficult. The same situation obtains with camphor. The synthetic product has, in large measure, nullified the price-raising powers of the Japanese monopoly. In the case of German potash the government fixed prices for a privately owned industry and for many years made them discriminatory against foreign purchasers. One of the outcomes was that the consumer was forced to carry the inefficient as well as the efficient units of that industry. The advent of competition from the French with the retrocession of Alsace to France after the War helped to compel a drastic reorganization of the German industry which has reduced unit costs; and this, along with the support of prices made possible by the formation of the Franco-German potash combine, has distinctly enhanced the profitability of the industry after a period of early postwar stress. This latter tendency to combine internationally has likewise been evidenced in respect to some of the other controls, as for example nitrate and, more recently, sugar.

In Brazil the coffee valorization schemes before and immediately after the War were partly successful; but the system of "permanent defense" in recent years, involving continuous efforts to support prices by regulation of exports, has proved a failure, the main difficulty being "too much coffee" withheld in stocks. In the case of rubber, after a period of inordinately high prices and profits, increased competition from the Dutch put the Stevenson plan out of commission.

Nevertheless, faith in the efficacy of such controls, supported if necessary by international agreements among the producing countries, still remains strong enough to encourage new efforts in this direction, and hence the problem remains distinctly

a live one. The experiences discussed in this book go far in substantiating the contention of the authors that a solution of the problems involved is not possible through national action alone. The problems are essentially international in their nature and require treatment which takes into consideration the welfare of, and gives a voice to, the foreign consumer of a product as well as to the domestic producer.

Students of international economic relations will find *International Control of Raw Materials* a worthy contribution to their field of interest.

Asher Hobson

University of Wisconsin

Arbeitsverfahren und Arbeitsleistungen in der Landwirtschaft, Ergebnisse aus der Arbeit der Betriebs-Abteilung der D. L. G. auf dem Gebeite der Landarbeit. I. Teil: Groszbetriebe, Zweite Auflage, bearbeitet von Dr. A. Peters und Dr. R. Tismer. Mit 186 Abbildungen und zwei farbigen Tafeln. Deutsche Landwirtschafts-Gesellschaft, 1930.

Farm Operations and Rates of Performance (Methods of work and labor accomplishment in agriculture). Bulletin No. 360. Results of the work of the Division of Farm Management of the German Agricultural Association in the field of farm labor. 2d Edition. Part I, Estates (large farms), Dr. A. Peters, Business Manager, Division of Farm Management; Dr. R. Tismer, Scientific Assistant, Division of Farm Management. German Agr'l Assn. With 186 Illustrations and 2 Colored Plates, 1930. 1st Edition July, 1928; 2nd Edition August, 1930. Revised and enlarged, with the addition of 97 illustrations and a treatment of 2 special estates and figures from the labor rings. Pp. 327. Paper.

The paper bound second edition of *Farm Operations and Rates of Performance* by Peters and Tismer, published in 1930, offers a thoroughly live and interestingly readable presentation of what might in other hands have degenerated into a tedious and monotonous citation of facts. Revising the first edition (July, 1928) by adding further data from their "labor rings," a special treatment of two large North German estates and 97 additional illustrations (a total of 186), the authors have offered to their readers a fund of significantly worth-while material for organizing and operating the farm business.

Through their connection with the German Agricultural Association (D. L. G.), the writers had at their disposal data on farm operations from 140 German estates covering the period of 1926 to 1929. Further, the operations of 79 estates attached to the "labor rings" organized in 1930 were available to them for the revised edition.

In addition to a description of the various field operations, pictorial and graphic illustrations thereof, and tabular data showing rates of performance under varying conditions, the authors present the blank forms used in gathering the data, a comprehensive presentation of the organization of 42 of their large estates, the details of the two special estates treated, and an appendix giving an excerpt of the directions for the conduct of the researches in farm labor under the control of the Division of Farm Management of the D. L. G. A bibliography on farm labor literature is appended.

A number of items in this treatise should prove of considerable interest to American readers. The organization of the estate farms of Germany is particularly of moment. The authors present in detail the organization of 42 representative estates (Groszbetriebe) including geographic location, superficial area, distance from the

railway station, precipitation, altitude, distribution of land under arable, meadow, and pasture, in both absolute and relative terms, livestock numbers in absolute and relative terms divided as to productive livestock and draft animals, crop distribution in absolute and relative terms, yields, labor force in absolute and relative terms and segregated as to regularly hired and transient workers, and those maintained on the estate and those living outside. Machinery and equipment are listed including, besides the regular farm equipment, such items as field railways, special trucks and trailers, and such "technical accessory businesses" as creameries, evaporators, and distilleries. A computed figure known as the "intensity factor" is given for each estate. The estates of Germany have always dominated her farm management and her agricultural thinking. Yet of over 5,000,000 farms the estates larger than 100 hectares (247 acres) in size number only about 20,000, a surprisingly small portion of all farms. The farms over 5 hectares (12½ acres in size) number but 1,180,000, leaving about 4,000,000 farms under 12½ acres. This may explain a growing interest in the small farm (Bauernbetrieb) and the justification for a separate publication on labor methods and performance on the small farm (Bulletin 368, D.L.G., 1929).

The interest on the part of the large landowners and the operators of estates in the first edition of their work induced the authors and the D.L.G. to undertake the publication of this, the revised second edition.

Of further interest to American readers are the blank forms used by German research workers in the field of farm labor and farm operations. It may be recalled that American research workers have objected to and complained of the detail involved in the relatively simple "daily labor record blank" used in the earlier farm "cost accounting" studies. In contrast it is understandable why Teutonic thoroughness and attention to details has made possible this study. It should be noted that the research into farm labor and its productivity in Germany is an outgrowth of the Taylor system which began in industry in the United States in the late nineteenth century, but apparently never entered into the agricultural field with any degree of success here. Following upon the blank forms above mentioned, of interest is the set of directions covering the conduct of labor studies in the "labor rings" in the D.L.G. It is quite possible that we in the United States shall later find ourselves definitely interested in farm labor studies in the United States. In this case the pioneer work done by the German research workers in this field should be of considerable value to us.

The major portion of this treatise of necessity deals with a presentation of the various farm operations under a chronological classification following the year's work on the farm: seedbed preparation, plowing, dragging, spreading fertilizers, harrowing, rolling, drilling, planting, etc., are followed in turn by cultivation details, harvest work, and miscellaneous items. Considerable detail is offered under each head and subhead, and mechanical and animal power as well as human labor are reported.

This section on farm operations is given its readable quality through the variety which exists in the performance of the many farm tasks described and the many illustrations and graphics which so aptly illuminate the text. Methods of hitching tractors, horses, and oxen, variations in the manner of coupling harrows or cultivators, variety in haying, in harvest, differences existing in hand and machine work, are all aptly described and equally aptly illustrated. The variety which exists even in a nation agriculturally mature as is Germany in doing the same farm tasks, bespeaks a consideration of the possibilities of change growing out of a perusal of the information listed in the pages of this work.

The tabular presentation of rates of performance are, interestingly enough, no-

where given in terms of averages but rather in terms of arrays of individual farms. These are classified by operation, tool and power, and include the following columns: farm number, soil, topography, texture, length of "through," machine or tool, width of machine, working width, working depth, rate of travel, actual turning time, non-working time in per cent of working time, same for turning, same for rests, number of men in crew, method of labor payment, accomplishment in area per hour of actual working time, per machine, and the same per unit of width.

As suggested above, a large degree of variety exists in the methods of doing farm work, in the tools and power and labor used, and in the accomplishment per man, per machine, and per unit of machine width.

These figures, say the writers, are not to be taken in stereotyped fashion, as examples of what may be expected on any and every farm. They are, however, evidence of a number of significant points: (1) Differences in the absolute amount of work applied to individual crops; (2) differences in the distribution of labor throughout the year for individual crops; (3) variations in the absolute quantities of labor used in the individual years; (4) variations in the time of beginning and in the duration of specific tasks as, for example, beginning of seedbed preparation, duration of harvest, etc.; (5) the influence of increasing mechanization as a substitute for or a reduction in the man labor and horse or machine power which up to now has been applied.

In reading the text, in noting the illustrations, and in studying and comparing the reported performances, the reader must bear in mind that these farms are all of larger than usual size, the superficial area being at least 250 acres and in many cases still larger. The type of cropping, labor hired, and the power and machinery used are all commensurate with such a setting which differs so vitally from that found on the small family farm.

Walter J. Roth

Bureau of Agricultural Economics

Cooperation in Danish Agriculture, by Harald Faber. London: Longmans, Green and Co. Ltd. 1931. Second Edition. pp. xxii and 188. 9 shillings ($1.75).

In 1913 a committee for the propagation of agricultural literature appointed by the Royal Agricultural Society of Denmark, recommended that a description of the cooperative movement be prepared and published. The Society asked the Central Cooperative Committee to undertake the task. This it did by prevailing upon Mr. H. Hertel, Secretary of the Royal Agricultural Society, to take charge of the work. The results appeared in 1917 under the title "Andelsbevoegelsen I Danmark" (The Cooperative Movement in Denmark). The same year Mr. Faber's *Cooperation in Danish Agriculture* appeared. It was an adaptation for English readers of Mr. Hertel's publication.

In the English language, the term "agricultural cooperation" is a near-synonym to the word Denmark. Mr. Faber's book was a standard reference for the student in this country. Since this book has been out of print for some time, those interested in following developments in the field of cooperation will welcome the second edition which has just appeared. Mr. Faber, thoroughly familiar with cooperative activities in his own country, is peculiarly equipped to present these to the English-reading public by virtue of his having served for more than 40 years in England as Agricultural Commissioner to the Danish Government.

For the most part, the statistical information in the first edition ended with 1914. In the second edition, data have been added for later years. Readers will regret that these figures have not been recorded throughout the text rather than added to the end

of chapters. The first edition traced, in a most satisfactory manner, the early history of the development of cooperation in Denmark. The bringing out of a second edition offered an excellent opportunity for continuing the story. It is felt that the author has not embraced fully this opportunity. Nevertheless without any additions or revisions, the book, in the opinion of the reviewer, would merit reprinting because of the value of its historical materials.

Although the cooperative movement in its modern form did not take hold in Denmark until the latter half of the nineteenth century, Danish farmers had, up to the end of the eighteenth century, practiced for generations the principles of cooperation in their village governments and through the management of the lands held in common by all members of the community. In its modern phases cooperation first appeared in the form of credit associations (1851) with societies for the distribution of goods, i.e., cooperative stores, coming second (1866). Between 1865 and 1885, Danish agriculture changed from a grain-growing to an animal-producing basis. It was this change that furnished the soil in which Danish cooperation grew and flourished. The growing importance of the production of animals and animal products gave rise to the need for improved methods in manufacturing and marketing butter and bacon, and for better facilities for the handling of eggs. Creameries, bacon factories, and egg-collecting agencies play a most substantial part in the present-day cooperative movement. Cooperative creameries had their beginning in 1882. The first cooperative bacon factory was established five years later. Eggs entered the list in a national way with the formation in 1895 of the Danish Cooperative Egg Export Society. The position which these commodity lines have assumed in the cooperative movement is indicated by the following figures:

Number of cooperative dairies (1929)	1362
Per cent of total number of farms members of cooperative dairies (1923)	90
Per cent of total number of dairy cows supplying milk to cooperative dairies (1923)	86
Number of cooperative bacon factories (1930)	59
Per cent of total number of farms members of cooperative bacon factories (1923)	70
Per cent of total hogs slaughtered handled by cooperative bacon factories (1923)	75
Per cent of total egg exports sent abroad by cooperative egg export societies (1929-30)	31

It is interesting to note that cooperation in Denmark has given marked attention to the export market. This attention has involved the establishment of national trademarks, signifying definite standards of quality, enforceable by law. In some instances it has involved the maintenance of sales branches in foreign countries.

Cooperation in Denmark in all its ramifications—creameries, bacon factories, egg-collecting agencies, stores, supply purchasing groups, credit, insurance, cow testing and breeding activities—is founded upon the local society, locally governed and controlled. The energies of these individual units are coordinated and unified by means of regional federations and national committees.

Asher Hobson

University of Wisconsin

Outlines of Agricultural Economics, by H. C. Taylor. New York: The Macmillan Company, 1931. 614 pp. $3.25.

The first edition of Taylor's *Agricultural Economics* appeared in 1905. It was revised in 1919, in 1925, and again in 1931. The last edition differs little from that of

1925. Paragraphs here and there have been changed to bring the text up to date, while the last chapter on the "Future of Agriculture" has been enlarged by the addition of a few pages. Perhaps the most significant change in the new edition is the first sentence in the preface which states that "the center of interest in Agricultural Economics has in recent years shifted from efficiency in production to justice in distribution." The additional pages deal with this phase of the subject.

The reviewer finds it of interest to compare the first edition, of 1905, with that of 1931. In the edition of 1905 one sees the specialized field of Agricultural Economics being built up out of the general economics field. Each succeeding edition has been enlarged and broadened by the addition of chapters on newly developed aspects.

The inclusion of the subjects of marketing, rural social life, cooperation, and a more virile type of statesmanship, are among the items distinguishing the later from the first edition. The four editions show well the development of the field of Agricultural Economics. The 1931 edition assures the book a continuation of its place as a standard text in Agricultural Economics.

J. I. Falconer

Ohio State University

NEWS ITEMS

Foreign Agricultural Service

Four men were sent abroad this summer in the Foreign Agricultural Service, Bureau of Agricultural Economics as follows:

Mr. Harry E. Reed, formerly Professor of Animal Husbandry, Kansas State Agricultural College, is stationed at London, England, as a commodity specialist in livestock, meats, and wool. His projects concern the collection and analysis of information on wool and mohair in the United Kingdom and Continental Europe, and the competition and demand for pork and pork products in the United Kingdom.

Mr. Joseph H. Shollenberger, formerly with the Bureau and in charge of its Milling, Baking, and Chemical Laboratory, will study the factors influencing European demand for United States wheat. His headquarters will be in London.

Mr. Bert W. Whitlock, in charge of the Pacific Coast headquarters of the Bureau's Grain Division, has been detailed to make a study of the malting-barley requirements of the United Kingdom. He will be gone about six months in all.

Mr. Lester D. Mallory has been appointed assistant agricultural commissioner at Marseilles, France.

The Western States Regional Conference

The second annual regional outlook conference of the western states was held at Salt Lake City, July 27-30 inclusive. All of the eleven western states were represented in the hundred and more who were in attendance at the meetings. The program of the conference included discussions of the general outlook, of the outlook for certain specific commodities, and of methods of research and extension in outlook work.

During the first day, the special commodity committees met individually and, in cooperation with representatives of the Bureau of Agricultural Economics, prepared "outlooks" in their special fields that were later presented to the general conference for discussion. These committees had been selected some time previous to the convening of the conference and their work contributed largely to the success of the conference.

The wheat committee reported that its members were of the opinion that "Wheat production on the good dry-farming lands should continue in spite of prices at present below cost of production. Only minor shifts to other crops and livestock enterprises seem possible or feasible." The report of the adjustment committee called attention to the complicated adjustments that were taking place in western agriculture and recommended that future outlook conferences give full consideration to problems of agricultural policy for that region. The drought committee requested that the United States Department of Agriculture immediately make a survey of livestock feeds and condition of pasture and ranges to the end that a complete report might be made available.

Among the important recommendations made by the Committee on the extension outlook program to the conference was that the commodity committees should be appointed five months in advance of the 1932 conference. The committee also believed that the conference should go further next year in adapting national outlook reports to conditions within a region or locality and that the training of state workers in the use and interpretation of the outlook reports is one of the important functions of regional conferences.

The land economics survey of Hubbard County, made possible by an appropriation of $40,000 by the 1929 Minnesota State Legislature, has been completed. Mr.

D. C. Dvoracek, extension economist, had charge of the economic phases of the survey. It is probable an extension bulletin will be published on the survey.

Dr. R. G. Blakey of the school of business administration will have general charge of a study of the tax burden on different types of real property in Minnesota, including a special study of the farm, and of the tax burden in relation to income. Dr. G. A. Pond of the division of agricultural economics will conduct the work for the smaller towns and rural communities, assisted by W. L. Cavert of the university agricultural extension service. The studies are made possible through a grant from the Rockefeller Foundation to the University of Minnesota for use in social science research.

The Canadian Society of Agricultural Economics held its annual meeting in June at the Ontario Agricultural College, Guelph. The following officers were elected: Dr. W. Allen, University of Saskatchewan, president; Dr. W. V. Longley, Agricultural College, Truro, Nova Scotia, vice-president; and Dr. J. F. Booth, Agricultural Economics Branch, Department of Agriculture, Ottawa, secretary.

The Georgia Office of the Division of Crop and Livestock Estimates of the B.A.E. has been moved from Atlanta to Athens and is now located at the Georgia State College of Agriculture. The personnel of this office is composed of D. L. Floyd, agricultural statistician; Archie Langley, assistant agricultural statistician; and Misses Garvin and Cooley, clerks. A cooperative arrangement between this office and the Georgia State College of Agriculture has been set up. J. William Fanning, Extension Economist in Farm Management of the College will cooperate with this office in the dissemination of economic information.

The Bureau of Agricultural Economics has turned over to the Federal Treasury $1,828.95, received from sales of its charts during the first six months of 1931. These sales are in addition to the free distribution of rotaprints in Bureau publications. Every vocational agricultural teacher in Mississippi has bought a wall chart, and there is keen interest in charts in other states.

The Department of Rural Sociology at North Carolina State College has been transferred to Department of Agricultural Economics in the School of Agriculture. It was formerly in the School of Science and Business. Mr. C. H. Hamilton who was formerly associated with V.P.I. has been appointed as Rural Sociologist.

Mr. A. E. Anderson, Director of Extension at South Dakota State College, is on leave of absence for the year. He is studying agricultural economics at the University of California.

Dr. M. R. Benedict, formerly lecturer on Economics at Harvard University, joined the staff of the Giannini Foundation, University of California at Berkeley, on July 1, as Professor of Agricultural Economics and Agricultural Economist with the Experiment Station and the Giannini Foundation. Dr. Benedict was formerly head of the Department of Agricultural Economics at South Dakota State College.

Dr. J. D. Black of Harvard University has been appointed as chief economist of the Farm Board. Dr. Black will continue his teaching work at Harvard University, hence will devote only part of his time to the work of the Board.

M. C. Bond of this Department is on a leave of absence and is working for the Division of Cooperative Extension U.S.D.A.

Mr. John H. Bondurant, a graduate of the University of Kentucky who has been enrolled in the graduate school at Cornell University during the past year and a half, has been appointed as field agent in farm management and will begin his duties February 1.

Dr. M. P. Catherwood of this Department has begun a study of the factors affecting the efficiency of rural government units.

C. W. Crickman of the Division of Farm Management and Costs of the Bureau of Agricultural Economics, United States Department of Agriculture, has spent the past six months at Minnesota, collaborating in the preparation of reports of cooperative studies in farm management in which the Bureau is cooperating with the Division of Agricultural Economics of the Minnesota Agricultural College. Mr. Crickman leaves in September for Harvard University where he has a social science research fellowship for the coming year.

Dr. Joseph W. Davis, who has been on leave of absence from Stanford University, acting as chief economist for the Farm Board, will shortly resume his duties as a Director of the Food Research Institute.

Byron C. Denny, who has been making the cooperative study in New Jersey under cooperative arrangement between the Federal Farm Board and the State agency, is spending the summer months completing a study of the auction markets in New Jersey and has accepted an appointment to take part in a poultry survey carried on by the University of Delaware, beginning October 10.

B. W. Ellis, Director of Agricultural Extension Service of Connecticut, has been granted a year's leave of absence which he plans to use in study at the University of California, and in observation of extension methods used in other states.

Mr. Frank Evans of Salt Lake City, Utah, was appointed August 7 to membership of the Federal Farm Board, filling the vacancy created by the retirement of C. C. Teague. Mr. Evans has long been connected with the American Farm Bureau Federation, having served as executive secretary and as general counsel.

Mr. Wm. G. Finn left the University of Kentucky, July 1, to join the staff of the Division of Historical and Statistical Research, Bureau of Agricultural Economics. Mr. Finn has been on the research and teaching staff at Kentucky for the past six years. His new work will be largely concerned with statistics of tobacco.

John Gauss, formerly of State College, Pa., has accepted a position in the Department of Agrl. Economics and Farm Management at Cornell.

Wayne A. Gilbert, formerly an assistant in the Department of Farm Organization and Management at the University of Illinois, has accepted a position as farm adviser in Stark County, Illinois.

Mr. F. A. Givan has accepted a position as Assistant Extension Economist in Farm Management at the state College of Washington, Pullman. Mr. Givan has just completed two years of advanced work in agricultural economics at the University of California. His undergraduate work was taken at Oregon State College. He served as assistant county agent at Pendleton, Oregon, and county agent at Libby, Montana, and later at Hamilton, Montana. He also spent a brief period in field research work in farm management for the Montana Agricultural College at Bozeman.

Dr. Asher Hobson has resigned from his position in the Bureau of Agricultural Economics to accept a professorship in agricultural economics at the University of Wisconsin effective September 10. For some years he was stationed at Rome as permanent delegate to the International Institute of Agriculture. Later, he studied at Geneva, Switzerland.

Mr. Print Hudson of Iowa State College has been awarded a fellowship by the Brookings Institution for the academic year 1931-32. He will devote his time to problems in the field of cooperative livestock marketing.

Mr. C. Donald Jackson has been appointed as an agricultural economist, Bureau of Agricultural Economics, and began work on taxation projects September 1. Since his previous work in the Bureau in 1924 he has taught statistics at Radcliffe and Harvard and economics at University of California, and has done research work for the Capper Committee and for a telephone company.

James T. Jardine, director of the Oregon Agricultural Experiment Station since 1920, has been made head of the Office of Experiment Stations, U. S. Department of Agriculture, and assistant director of scientific work, effective September 1. At present the 53 experiment stations are carrying forward about 9,500 research projects.

Mr. Edwin A. Johnson, an assistant in marketing research at the University of Minnesota last year, has accepted a position at the University of Kentucky. He will be engaged in extension in marketing outlook and price analysis.

Dr. M. S. Kendrick of the Department of Agrl. Economics and Farm Management is teaching in the summer school at Duke University, Durham, N.C. this summer.

Mr. Alexander Legge, former chairman of the Federal Farm Board, was elected a director-at-large of the Cotton Stabilization Corporation.

Dr. Theodore Macklin has been appointed chief of the Division of Markets of the California State Department of Agriculture.

Mr. James G. Maddox has accepted a position at the University of Arkansas in the department of rural sociology.

Dr. James C. Malin, Associate Professor of History at the University of Kansas, spent some weeks during the past summer at the Institute of Economics of the Brookings Institution, where he carried the manuscript of his *History of Recent Agricultural Policies of the United States* to an advanced stage of completion.

Allen W. Manchester will be acting director of agricultural extension, Connecticut Agricultural College during the current year.

W. G. Meal, formerly connected with the Federal Farm Board, has been appointed Extension Economist in Marketing at the New Jersey Agricultural College, New Brunswick, New Jersey.

Professor R. W. Murchie, Head of the Department of Economics and Sociology, Manitoba Agricultural College, Winnipeg, has resigned and joined the Department of Sociology, University of Minnesota, in September.

Mr. James McNulty has resigned his position as county agent of Winona County, Minnesota, and has accepted a position on the staff of the Division of Agricultural Economics as research assistant in marketing. He will devote his time primarily to the problems of cooperative livestock shipping associations.

Professor W. D. Nicholls, head of the Department of Farm Economics, University of Kentucky, spent the summer in Europe, studying economic problems of agriculture. Most of Dr. Nicholls' time was spent in the Black Forest region and the Rhine country of southern Germany, and in Switzerland. His study was largely devoted to land utilization and farm organization problems.

Mr. Merton Oyler, instructor and research worker in rural life problems in Kentucky, will be on leave of absence during the scholastic year 1931-32 doing graduate work at the University of Chicago. Mr. Frank Boyd, who for the past two years has been doing extension work in rural sociology for the University of Missouri, has been appointed to carry on the work in Kentucky during Mr. Oyler's absence.

J. Wayne Reitz, a graduate of the Colorado Agricultural College who has been employed in farm management extension work in Colorado during the past year, will do extension work in the Department of Farm Organization and Management at the University of Illinois after September 1.

Mr. T. Lynn Smith, a holder of a Social Science Research Council fellowship studying at Harvard the past year, has accepted a position in rural sociology at Louisiana State University at Baton Rouge.

Mr. Kenneth Stern has resigned his position as instructor in the Department of Agricultural Economics, Pennsylvania State College, where he has been specializing in the field of cooperation, to accept a position as field man with the Eastern States Farmers' Exchange. He will be located in southeastern Pennsylvania.

Dr. W. B. Stout has been appointed extension economist in marketing at Purdue University, taking the place of the late Professor W. W. Underwood, who died in an automobile accident last March. Dr. Stout received the Ph.D. degree at Ohio State University in 1930 and then did teaching, research, and extension work in marketing in Ohio. He began his work at Purdue on August 1.

Dr. Howard J. Stover of Cornell University assumed his duties with the Giannini Foundation of Agricultural Economics at the University of California on August 1. Dr. Stover received the Ph.D. degree at Cornell in September, 1930, with a major study in prices and statistics.

Mr. Robert Tootell, who completed a year of graduate work at the University of California in agricultural economics and received the master's degree in June, has been appointed Extension Land Economist at the Montana Experiment Station at Bozeman, Montana, effective July 1, 1931.

Dr. W. H. van der Merwe, who recently completed his work for the Ph.D. degree at Minnesota, has returned to the Department of Economics, Pretoria, South Africa. He planned to visit the cotton industries of England and Germany on his way.

Mr. Harold A. Vogel, who was granted an M.S. degree in agricultural economics at the University of Minnesota in 1930, has been appointed to the position of Assistant Agricultural Economist at the University of Idaho. He will devote part time to research and part to the teaching of statistics.

Mr. F. R. Wilcox has been appointed extension specialist in marketing and associate on the Giannini Foundation of Agricultural Economics, University of California. For the past year Mr. Wilcox has been general manager of the National Pecan Marketing Association, Jackson, Mississippi.

Mr. W. W. Wilcox of the Division of Farm Management and Costs of the Bureau of Agricultural Economics, United States Department of Agriculture, spent the months of June and July in Minnesota making a case study of a group of dairy farmers as a part of the study of the human factor in farming in which the Bureau and the Division of Agricultural Economics have been cooperating the past two years.

Mr. George T. Willingmyre, in charge of the wool standardization and marketing investigations, Bureau of Agricultural Economics, resigned to become administrator of wool, Bureau of Customs, Treasury Department, effective September 1. Mr. Willingmyre began in the wool industry in 1897 in commercial work. From 1913 to 1916 he was a wool specialist for the Canadian government. He organized the first Canadian wool cooperative. Since 1917, Mr. Willingmyre has been a wool specialist in the department of Agriculture working on wool marketing, especially the development of standards for wool and wool top.

The program for the American Farm Economic Association meeting in December is not yet completed but its content and form will be substantially as follows:

The session is scheduled for December 28, 29, and 30. Arrangements have been made for headquarters at the Willard Hotel, Washington, D.C.

The first session, opening at 9:30, December 28, will be devoted to a discussion of the agricultural situation; the probable future trend of the general price level, and the business depression as factors in the agricultural outlook. The Farm Economic Association will join with Rural Life in a luncheon, following which there will be a discussion of the human factor in agriculture. The afternoon session will be devoted to foreign and world-wide conditions affecting the outlook for American agriculture. The evening session, Monday, will be devoted to readjustments in production, taxation, and credit.

Tuesday's sessions will be joint meetings with the State Marketing Officials. The morning session will be devoted to a discussion of the needs for marketing research; the afternoon to a round table on the contents of courses in marketing; and the evening session to the origin and development of work in farm economics and the contributions of the late W. J. Spillman. For luncheon Tuesday the Farm Economic Association may join the American Statistical Association, with addresses on the economic outlook. In the afternoon there will be a round table discussion dealing with readjustments in labor and power on farms. This round table will meet at the same time as the round table devoted to the teaching of marketing.

The morning session Wednesday will be devoted to a discussion of demand—a joint session with the Statistical Association. The usual luncheon of the Farm Economic Association will be held Wednesday, and the afternoon will be devoted to a discussion of national and regional readjustments in farm organization.

Dr. W. J. Spillman, principal agricultural economist, division of farm management and costs, Bureau of Agricultural Economics, died suddenly on July 11, following an operation at Garfield Hospital, Washington, D.C. He is survived by his wife and one son, Dr. Ramsay Spillman.

In view of his long service to the Farm Economic Association and of his valuable contributions to Agricultural Economics, it is planned to carry a suitable memorial in the January issue of the JOURNAL.

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